



**DEPARTMENT OF PROCUREMENT SERVICES  
NON-COMPETITIVE REVIEW BOARD (NCRB) APPLICATION**

Complete this cover form and the **Non-Competitive Procurement Application Worksheet** in detail. Refer to the page entitled "Instructions for Non-Competitive Procurement Application" for completing this application in accordance with its policy regarding NCRB. Complete "other" subject area if additional information is needed. Subject areas must be fully completed and responses merely referencing attachments will not be accepted and will be immediately rejected.

<b>Department</b>	<b>Originator Name</b>	<b>Telephone</b>	<b>Date</b>	<b>Signature of Application Author</b>
Police	Perfetti, Joseph	312/745-5620	6/22/2017	
Contract Liaison	Email Contract Liaison	Telephone		
Brown, Joel	joel.brown@chicagopolice.org	312/745-5650		

**List Name of NCRB Attendees/Department**

Joseph Perfetti  
Joel Brown  
Roslyn Joshua

Request NCRB review be conducted for the product(s) and/or service(s) described herein.

Company: **NEC Corporation**

Contact Person: Taylor, Cindy      Phone: 916/463-7070      Email: cindy.taylor@necam.com

Project Description: **Automated Fingerprint Identification System Maintenance**

This is a request for:

- |   |   |
|---|---|
| <input type="checkbox"/> New Contract   | <input checked="" type="checkbox"/> Amendment / Modification  |
| <b>Contract Type</b>  | <b>Type of Modification</b>   |
| <input checked="" type="checkbox"/> Blanket Agreement    Term: ____ (# of mo) | <input checked="" type="checkbox"/> Time Extension <input type="checkbox"/> Vendor Limit Increase <input type="checkbox"/> Scope Change |
| <input type="checkbox"/> Standard Agreement                                   | Contract Number: <b>25137</b>   |
|   | Specification Number: <b>98390</b>  |
|   | Modification Number: _____  |

<p><b>Department Request Approval</b></p> <p></p> <p>DEPARTMENT HEAD OR DESIGNEE      DATE: 7/27/17</p> <p>PRINT NAME: Jonathan L Johnson</p>	<p><b>Recommended Approval</b></p> <p></p> <p>BOARD CHAIRPERSON      DATE: 7-28-17</p> <p>PRINT NAME: Rich Butler</p>
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**(FOR NCRB USE ONLY)**

Recommend Approval/Date: 7-28-17

Return to Department/Date: \_\_\_\_\_

Rejected/Date: \_\_\_\_\_

SY 7/27/17

Approved       Rejected

CHIEF PROCUREMENT OFFICER      DATE: 7/28/17



**DEPARTMENT OF PROCUREMENT SERVICES  
NON-COMPETITIVE REVIEW BOARD (NCRB) APPLICATION  
JUSTIFICATION FOR NON-COMPETITIVE PROCUREMENT WORKSHEET**

All applicable information on this worksheet must be addressed using each question found on the "Instructions for Non-Competitive Procurement Application" in this application.

**Justification for Non-Competitive Procurement Worksheet**

**PROCUREMENT HISTORY**

**PROCUREMENT HISTORY (INCLUDING FUTURE PROCUREMENT OBJECTIVES)**

The Chicago Police Department is requesting a vendor limit increase and a time extension for the above contract for two years in the amount of \$1,091,527.04

1. Describe the requirement and how it evolved from initial planning to its status.

The Chicago Police Department is seeking to engage in a 2 year contract extension with NEC relative to the maintenance of the Automated Fingerprint Identification System (AFIS). The current contract (specification # 98390, contract # 25137) expires on March 21, 2017. The maintenance period for this request is 22 March 2017 thru March 21, 2019.

In 1985, then Superintendent Rice put together a project team of Police Department representatives to research the feasibility of obtaining a new criminal identification technology. A private sector oversight committee comprised of various business executives monitored the project.

At the inception of this project, comprehensive benchmark procedures were developed that were used to identify the vendor that would answer the Police Department's requirements. Two of the three vendors performed benchmark testing for a two week period. The third vendor that was not benchmarked was non-responsive to the RFP. The RFP was authored at the Police Department in concert with MIS, and the Law and Purchasing Departments.

Based on the benchmark results and a review by the oversight committee a recommendation from the Police Department project team was forwarded to Superintendent Rice and negotiations were initiated with NEC. The AFIS System was installed and operational in 1987.

In 1999, the Chicago Police Department procured the newest AFIS technology (AFIS 21) from NEC. The implementation of AFIS 21 delivered a streamlined fingerprint process which greatly reduced the need for human intervention. This new technology also established an automated interface between the fingerprint identification process and CPD's new criminal history records management system called CHRIS.

In 2002, the Chicago Police Department procured a database and fingerprint archive upgrade to the AFIS System which expanded the database storage capacity and improved archive functionality.

In 2008, The Field Services Section performed an upgrade and database expansion to the Automated Fingerprint Identification System (AFIS). The upgraded system has expanded the system core functionality to include both enhanced fingerprint and palm print functionality. Listed below are the upgrades and expansions to the CPD AFIS

Palm print matching (30% of impressions recovered at crime scenes are fractions of palm prints, this new technology will allow latent examiners to search suitable palm impressions against the palm print database.



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- Slap print matching and storage
- New 10-finger Tenprint database to improve Tenprint accuracy (6 rolled and 4 slap; day one forward for slap). The old system only had two finger matching.
- Capacity for 1,800 Fingerprint submissions per day. Old system was designed for 1100 prints per day and CPD was hitting its capacity on a daily basis
- Mobile ID functionality for 1000, 1:N cold searches per day with a 3 minute response
- Enhanced Latent Matching Algorithm (ELMA)
- Web based Archive and Reporting System

In addition to the functions stated above, the AFIS upgrade provided a technology refreshment to include the latest industry standard servers, workstations, operating systems and middleware.

In 2012, the Field Services Section performed an database expansion to the Automated Fingerprint Identification System (AFIS). Hardware was added and the databases containing both the fingerprint and palm print impressions and records were expanded.

Since 1987, all components (hardware and software) have been serviced by NEC onsite customer engineers.

2. Is this a first time requirement or a continuation of previous procurement from the same source? If so, explain the procurement history.

This request is a continuation of a current procurement from NEC. The current Contact number is 25137 and Specification number is 98390. This request is for a two year extension.

3. Explain attempts made to competitively bid the requirement. (Attach copy of notices and list of sources contacted)

The initial procurement of the AFIS system was procured via the RFP process. Since that time, the NEC system is proprietary in nature and involves proprietary fingerprint matching algorithms. No other AFIS vendor has ever maintained or upgraded an NEC AFIS system.

4. Describe all research done to find other sources. (List other cities contacted, companies in the industry contacted, professional organizations, periodicals and other publications used).

Not applicable

5. Explain future procurement objectives. Is this a one-time request or will future requests be made for doing business with the same source?

There will be future requests for new contracts that will be in relation to the maintenance of the AFIS System.

6. Explain whether or not future competitive bidding is possible. If not, why not?

Future competitive bidding, while possible, would be extremely costly.



**DEPARTMENT OF PROCUREMENT SERVICES  
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**ESTIMATED COST**

1. What is the estimated cost for this requirement (or for each contract, if multiple awards contemplated)? What is the funding source?

The estimated cost for 2 years of maintenance is \$1,091,527.04. The funding source is the Police Department Corporate Budget.

2. What is the estimated cost by fiscal year, if the job project or program covers multiple years?

The following represents the estimated costs for each year:

March 22, 2016- March 21, 2017- \$64,765.50

March 22, 2017- March 21, 2018 -\$505,793.86

March 22, 2018 - March 22, 2019 -\$520,967.68

3. Explain the basis for estimating the cost and what assumptions were made and/or data used (ie. Budgeted amount, previous contract price, current catalog or cost proposal from firms solicited, engineering or in-house estimate, etc).

The basis for estimating the cost is derived from a cost proposal from the vendor.

4. Explain whether the proposed Contractor or the City has a substantial dollar investment in original design, tooling or other factors which would be duplicated at City expense if another source was considered. Describe cost savings or other measurable benefits to the City which may be achieved.

The Chicago Police Department has a substantial dollar investment in the system design and multiple customized interfaces that would need to be duplicated at CPD expense if another AFIS vendor were considered. In 1999, CPD invested 4.3 million dollars in system design, development, data conversion, customized interfaces, training and system implementation. In 2002, CPD invested 778,000 dollars in a system upgrade to expand database capacity. In 2008, CPD invested 3.1 million dollars in a system upgrade. In 2012, CPD invested 225,000 dollars in a database expansion.

5. Explain what negotiation of price has occurred or will occur. Detail why the estimated cost is deemed reasonable.

Based on the quotes received by sole source vendor NEC, the provided cost was deemed acceptable by the Chicago Police Department.

**SCHEDULE REQUIREMENTS**

1. Explain how the schedule was developed and at what point the specific dates were known.

The schedule is based on the life cycle of the technology and the previously negotiated contract dates.

2. Is lack of drawings and /or specifications a constraining factor to competitive bidding? If so, why is the proposed Contractor the only person or firm able to perform under these circumstances? Why are the drawings and specifications lacking? What is the lead time required to get drawings and specifications suitable for competition? If lack of drawings and specifications is not a constraining factor to competitive bidding, explain why only one person or



**DEPARTMENT OF PROCUREMENT SERVICES  
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JUSTIFICATION FOR NON-COMPETITIVE PROCUREMENT WORKSHEET**

firm can meet the required schedule.

Not Applicable

3. Outline the required schedule by delivery or completion dates and explain the reasons why the schedule is critical.

Due to the fact that the current warranty will expire March 21, 2017, it is critical that the system be maintained to ensure it functions properly. Chicago Police Department relies entirely on the AFIS system to facilitate the criminal identification of persons taken into custody, processing of fingerprints for city applicant, crime scene latent processing, etc. Failure to properly maintain this equipment would negatively impact CPD's ability to process persons and create a legal liability for the Department.

4. Describe in detail what impact delays for competitive bidding would have on City operations, programs, costs and budgeted funds.

Competitive bidding is not possible since other than NEC; no vendor exists that is capable of performing maintenance and system support of the NEC AFIS.

**EXCLUSIVE OR UNIQUE CAPABILITY**

1. If contemplating hiring a person or firm as a Professional Service Consultant, explain in detail what professional skills, expertise, qualifications, other factors make this person or firm exclusively or uniquely qualified for the project. Attach copy of cost proposal and scope of services.

Not Applicable

2. Does the proposed firm have personnel considered unquestionably predominant in the particular field?

Not Applicable

3. What prior experience of highly specialized nature does the person or firm exclusively possess that is vital to the job, project or program?

Not Applicable

4. What technical facilities or test equipment does the person or firm exclusively possess of a highly specialized nature which is vital to the job?

Not Applicable

5. What other capabilities and/or capacity does the proposed firm possess which is necessary for the specific job, project or program which make them the only source who can perform the work within the required time schedule without unreasonable costs to the City?

Not Applicable

6. If procuring products or equipment, describe the intended use and explain any exclusive or unique capabilities, features and/or function the items have which no other brands or models, etc. possess. Is compatibility with existing





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equipment critical from an operational standpoint? Explain why.

Not Applicable

7. Is competition precluded because of the existence of patent rights, copyrights, trade secrets, technical data or other propriety data? Attach documentation verifying such.

See Attached

8. Is procuring replacement parts and/or maintenance services, explain whether or not replacement parts and/or services can be obtained from any other sources? If not, is the proposed firm the only authorized or exclusive dealer/distributor and/or service center? If so, attach letter from manufacturer.

CPD is seeking maintenance of an existing system that is proprietary in nature which precludes any other vendor from providing the required system maintenance and system support.

**MBE/WBE COMPLIANCE PLAN**

1. All submissions must contain detailed information about how the proposed firm will comply with the requirements of the City's Minority and Women Owned Business program. All submissions must include a complete C-1 and D-1 form,

Which is available on the Procurement Service page on the City's intranet site. MBE/WBE will be addressed and on-going. See Attached.

OTHER

1. Explain other related considerations and attach all applicable supporting documents (an approved Information Technology Strategy Committee (ITSC) form, an approved Request for Individual Contract Services form, etc.)



## DEPARTMENT OF PROCUREMENT SERVICES NON-COMPETITIVE REVIEW BOARD (NCRB) APPLICATION INSTRUCTIONS FOR NON-COMPETITIVE PROCUREMENT APPLICATION

### INSTRUCTIONS FOR PREPARATION OF NON-COMPETITIVE PROCUREMENT APPLICATION

If a City Department has determined that the purchase of supplies, equipment, work and/or services cannot be done on a competitive basis, a justification must be prepared on this "Justification for Non-Competitive Procurement Application" in which procurement is requested on a non-competitive basis in accordance with 65 ILCS 5/8-10-4 of the Illinois Compiled Statutes. Using this instruction sheet, all applicable information must be addressed on the worksheet. The information provided must be complete and in sufficient detail to allow for a decision to be made by the Non-Competitive Procurement Review Board. For Amendments, Modifications, describe in detail the change in terms of dollars, time period, scope of services, etc., its relationship to the original contract and the specific reasons for the change. Indicate both the original and the adjusted contract amount and/or expiration date with this change.

Attach a DPS Checklist and any other required documentation; the Board will not consider justification with incomplete information documentation or omissions.

#### PROCUREMENT HISTORY

1. Describe the requirement and how it evolved from initial planning to its present status.
2. Is this a first time requirement or a continuation of previous procurement from the same source? If so, explain the procurement history.
3. Explain attempts made to competitively bid the requirement (attach copy of sources contacted).
4. Describe in detail all research done to find other sources; list other cities, companies in the industry, professional organizations contacted. List periodicals and other publications used as references.
5. Explain future procurement objectives. Is this a one-time request or will future requests be made for doing business with the same source?
6. Explain whether or not future competitive bidding is possible. If not, explain in detail.

#### ESTIMATED COST

1. What is the estimated cost for this requirement or for each contract, if multiple awards are contemplated? What is the funding source?
2. What is the estimated cost by fiscal year?
3. Explain the basis for estimating the cost and what assumptions were made and/or data used (i.e., budgeted amount, previous contract price, current catalog or cost proposal from firms solicited, engineering or in-house estimate, etc.)
4. Explain whether the proposed Contractor or the City has a substantial dollar investment in original design, tooling or other factors which would be duplicated at City expense if another source was considered. Describe cost savings or other measurable benefits to the City which may be achieved.
5. Explain what negotiation of price has occurred or will occur. Detail why the estimated cost is deemed reasonable.

#### SCHEDULE REQUIREMENTS

1. Explain how the schedule was developed and at what point the specific dates were known.
2. Is lack of drawings and/or specifications a constraining factor to competitive bidding? If so, why is the proposed Contractor the only person or firm able to perform under these circumstances? Why are the drawings and specifications lacking? What is the lead time required to get drawings and specifications suitable for competition? If lack of drawings and specifications is not a constraining factor to competitive bidding, explain why only one person or firm can meet the required schedule.
3. Outline the required schedule by delivery or completion dates and explain the reasons why the schedule is critical.
4. Describe in detail what impact delays for competitive bidding would have on City operations, programs, costs and budgeted funds.

#### EXCLUSIVE OR UNIQUE CAPABILITY

1. If contemplating hiring a person or firm as a Professional Service Consultant, explain in detail what professional skills, expertise, qualifications, and/or other factors make this person or firm exclusively or uniquely qualified for the project. Attach a copy of the cost proposal, scope of services, and **Temporary Consulting Services Form**.
2. Does the proposed firm have personnel considered unquestionably predominant in the particular field?
3. What prior experiences of a highly specialized nature does the person or firm exclusively possess that is vital to the job, project or program?
4. What technical facilities or test equipment does the person or firm exclusively possess of a highly specialized nature which is vital to the job?
5. What other capabilities and/or capacity does the proposed firm possess which is necessary for the specific job, project or program which makes them the only source who can perform the work within the required time schedule without unreasonable costs to the City?
6. If procuring products or equipment, describe the intended use and explain any exclusive or unique capabilities, features and/or functions the items have which no other brands or models, possess. Is compatibility with existing equipment critical from an operational standpoint? If so, provide detailed explanation?
7. Is competition precluded because of the existence of patent rights, copyrights, trade secrets, technical data, or other proprietary data (attach documentation verifying such)?
8. If procuring replacement parts and/or maintenance services, explain whether or not replacement parts and/or services can be obtained from any other sources? If not, is the proposed firm the only authorized or exclusive dealer/distributor and/or service center? If so, attach letter from manufacturer on company letterhead.

#### MBE/WBE COMPLIANCE PLAN

- \* All submissions must contain detailed information about how the proposed firm will comply with the requirements of the City's Minority and Women Owned Business program. All submissions must include a completed C-1 and D-1 form, which is available on the Procurement Services page on the City's intranet site. The City Department must submit a Compliance Plan, including details about direct and indirect compliance.

#### OTHER

1. Explain other related considerations and attach all applicable supporting documents, i.e., an approved "ITGB Form" or "Request For Individual Hire Form".

#### REVIEW AND APPROVAL

**This application must be signed by both Originator of the request and signed by the Department Head. After review and final disposition from the Board, this application will be signed by the Board Chairman. After review and final disposition from the Board, this form will be presented to the Chief Procurement Officer recommending approval.**

# Project Checklist

Attach required forms for each procurement type and detailed scope of services and/or specifications and forward original documents to the Chief Procurement Officer; City Hall, Room 806.

**Date:**  
June 22, 2017

**Department Name:**  
Chicago Police Department

**Requisition No:** 139505      **Specification No:** 98390

**PO No:** 25137      **Modification No:**

**Contract Liaison:**  
Joel Brown

**Telephone:**  
312.745.5640

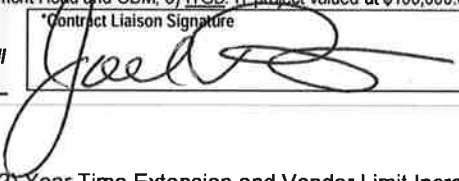
**Email:**  
joel.brown@chicagopolice.org

**Project / Program Manager:**  
Jonathan L. Johnson

**Telephone:**  
212.745.5640

**Email:**  
jon.johnson@chicagopolice.org

For blanket agreements, original or lead department must consult with other potential departments who may want to participate on the blanket agreement. If grant funded, attach copy of the approved grant application and other terms and conditions of the funding source. **Note:** 1) **Funding:** Attach information if multiple funding lines; 2) **Individual Contract Services:** Include approval form signed by Department Head and OBM; 3) **ITGB:** IT project valued at \$100,000.00 or more, attach approval transmittal sheet.

**\*Contract Liaison Signature**  


**\*By signing this form, I attest that all information provided is true and accurate.**

**Project Title:**  
NEC Corporation of America, Inc Two (2) Year Time Extension and Vendor Limit Increase in the amount of \$1,091,527.04.

**Project Description:**  
NEC Corporation of America, Inc Two (2) Year Time Extension and Vendor Limit Increase in the amount of \$ 1,091,527.04. Currently CPD utilizes the contract with NEC Corporation America, Inc for automated fingerprint identification system storage support, and maintenance. Due to proprietary matching algorithms and specialized application software. NEC Corporation of America, Inc is the only vendor that can provide maintenance for Chicago Police Department.

**Funding:**

<input checked="" type="checkbox"/> Corporate	<input type="checkbox"/> Bond	<input type="checkbox"/> Enterprise	<input type="checkbox"/> Grant	<input type="checkbox"/> Other:
<input type="checkbox"/> IDOT/Transit	<input type="checkbox"/> IDOT/Highway	<input type="checkbox"/> FHWA	<input type="checkbox"/> FTA	<input type="checkbox"/> FAA

LINE	FY	FUND	DEPT	ORGN	APPR	ACTV	PROJECT	RPTG	ESTDOLLAR AMOUNT
016	0100	057	4262	0154	220154	0000	0000	64,765.50	
017	0100	057	4262	0154	220154	0000	0000	505,793.86	
018	0100	057	4262	0154	220154	0000	0000	520967.68	

**Check One:**  
 New Contract Request

**\*By signing below, I attest the estimates provided for this contract are true and accurate.**

**\*Project / Program Manager Signature**  


**\*Commissioner/Authorized Designee Signature**  


**Purchase Order Information:**

**Contract Term (No. of Months):** 24

**Extension Options (Rate of Recurrence):** 0

**Estimated Spend/Value:** \$ 1,091,527.04

**Purchase Order Type:**

Blanket/Purchase Order (DUR)  
 Master Consultant Agreement (Task Order)  
 Standard/One-Time Purchase

**Special Approvals Required:**

Emergency  
 Non-Competitive Review Board (NCRB)  
 Request for Individual Contract Services  
 Information Technology Governance Board (ITGB)

**Procurement Method:**

Bid     RFP     RFQ     RFI  
 Small Order

**Grant Commitment / Expiration Date:**

**Pre-Bid/Submittal Conference:**  Yes     No  
 Mandatory     Site Visit

**Contract Type:**

Architect Engineering     Commodity     Construction     JOC     SBI  
 Professional Services     Revenue Generating     Vehicle & Heavy Equipment  
 Work Service     Joint Procurement     Reference Contract

**Modification or Amendment**

**Modification Information:**

**PO Start Date:** March 21, 2017  
**PO End Date:** March 21, 2018

**Amount (Increase/Reduction):**

**Modification/Amendment Type:**

Time Extension     Scope Change/Price Increase /Additional Line Item(s)  
 Vendor Limit Increase     Requisition Encumbrance Adjustment  
 Other (specify):

**MBE/WBE/DBE Analysis: (Attach MBE/WBE/DBE Goal Setting Memo)**

Full Compliance     Contract Specific Goals  
 No Stated Goals     Waiver Request

**Vendor Info:**

**Name:** NEC Corporation of America, Inc  
**Contact:** Cindy Taylor  
**Address:** 3929 W John Carpenter Freeway Irving, Texas 75063  
**E-mail:** cindy.taylor@necam.com  
**Phone:** 214.262.6000

**Risk Management / EDS**

**Insurance Requirements (included)**     Yes     No  
**EDS Certification of Filing (included)**     Yes     No





CERTIFICATE OF FILING FOR  
CITY OF CHICAGO ECONOMIC DISCLOSURE STATEMENT

EDS Number: 106863

Date of This Filing: 06/16/2017 09:42 AM

Certificate Printed on: 06/16/2017

Original Filing Date: 04/04/2017 08:29 AM

Disclosing Party: NEC Corporation of America Title: Contract Administration Manager, Sr.  
Filed by: Ashanti Jones

Matter: AFIS

Applicant: NEC Corporation of America

Specification #: 98390

Contract #: 25137

The Economic Disclosure Statement referenced above has been electronically filed with the City. Please provide a copy of this Certificate of Filing to your city contact with other required documents pertaining to the Matter. For additional guidance as to when to provide this Certificate and other required documents, please follow instructions provided to you about the Matter or consult with your City contact.

A copy of the EDS may be viewed and printed by visiting <http://webapps1.cityofchicago.org/EDSWeb> and entering the EDS number into the EDS Search. Prior to contract award, the filing is accessible online only to the disclosing party and the City, but is still subject to the Illinois Freedom of Information Act. The filing is visible online to the public after contract award.

June 20, 2017

Joe Perfetti  
Chicago Police Department  
3510 South Michigan Avenue  
Chicago, IL 60653

Re: Sole Source Letter for NEC AFIS Maintenance

Dear Mr. Perfetti:

On behalf of NEC Corporation of America, I am responding to your request for sole source justification for the NEC AFIS Maintenance request to the existing NEC AFIS currently in use by Chicago Police Department.

Due to the proprietary matching algorithms and specialized application software, NEC is the only vendor that can provide system maintenance for the existing Chicago Police Department AFIS.

NEC Corporation of America has provided the Chicago Police Department with an Automated Fingerprint Identification System (AFIS) comprised of our proprietary matching software and software for extracting fingerprint minutia, creating multiple fingerprint databases, and searching/matching algorithms for fingerprint identification. The current Chicago Police Department electronic fingerprint databases, used for comparison and searching tasks, are integrated, proprietary, and use native data-exchange algorithms that interface exclusively with the NEC Fingerprint matching algorithm and the NEC Global Workstation for Latent (GWS-L).

NEC Corporation of America is the sole provider of the Automated Fingerprint Identification System (AFIS) being used by the Chicago Police Department. In addition, NEC Corporation of America holds all patents and has exclusive proprietary software rights on all application programs, fingerprint matching algorithms and native fingerprint images. No other vendor can convert proprietary data or provide database performance expansion services, maintenance, interfaces to external data sources or make modification to products authorized to be marketed by NEC.

Please do not hesitate to call me at 513.218.1680 if you have any further questions.

Sincerely,



Greg Uher  
Director, Customer Service and Support  
Advanced Recognition Systems

\*\*\* Quote \*\*\*

June 20, 2017

Joe Perfetti  
Chicago Police Department  
3510 South Michigan Avenue  
Chicago, IL 60653

Customer: 1000098227  
Contract: IDS1124

Dear Mr. Perfetti:

The term of your maintenance agreement on your NEC AFIS (Automated Fingerprint Identification System) is due for renewal. The annual maintenance charges (AMC) for 2017 will be \$505,793.86. Please accept this letter as notification of the renewal of your NEC AFIS maintenance coverage effective March 22, 2017 through March 21, 2018.

2016 AMC	AMC ADJUSTMENT	2017 AMC
\$ 491,062.00	\$ 14,731.86	\$ 505,793.86
	<b>Quarterly Amount</b>	<b>\$ 126,448.47</b>
	<b>Total Annual Amount</b>	<b>\$ 505,793.86</b>

This is not an invoice. Invoices will be sent separately from our billing team. Please review and sign below. Once a PO is received we will process an invoice.

The NECAM team is proud of our history supporting national, state and local law enforcement in their crucial roles and we are committed to providing you with excellent service and support. NEC appreciates your business and we look forward to fulfilling your future AFIS needs.

Sincerely,

*Cindy Taylor*

Cindy Taylor  
Administrative Support Specialist  
NEC Corporation of America  
Ph: 916-463-7070  
[cindy.taylor@necam.com](mailto:cindy.taylor@necam.com)



**Rahm Emanuel**  
Mayor

**Department of Police • City of Chicago**  
3510 S. Michigan Avenue • Chicago, Illinois 60653

**Eddie T. Johnson**  
Superintendent of Police

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Jamie Rhee  
Chief Procurement Officer  
Department of Procurement Services  
121 North LaSalle Street – Room 806  
Chicago, Illinois 60602

June 22, 2017

**Re: NEC Corporation of America Inc. Sole Source Request for MBE/WBE Compliance**  
**Requisition: 139505**  
**Specification: 98390**

CPO Rhee,

The Chicago Police Department will concur with the amounts from NEC Corporation of America Inc. request for MBE (5.08%) and WBE (0.13%) for automated fingerprint identification system storage, upgrade support, and maintenance. Due to proprietary matching algorithms and specialized application software, NEC is the only vendor that can provide system maintenance for CPD. Please find the supporting documents attached.

A handwritten signature in black ink, appearing to read "Jonathan L. Johnson", followed by a circular stamp or mark.

Jonathan L. Johnson  
Commander  
Bureau of Organizational Development  
Chicago Police Department



June 20, 2017

Joseph Perfetti  
Director, Records Services Division  
Chicago Police Department  
3510 S. Michigan Avenue  
Chicago, IL 60653

Re: Chicago Police Department's Sole Source AFIS Agreement (Pending) MBE/WBE Waiver Request

Dear Mr. Perfetti:

As part of the Sole Source requirement with the City of Chicago, this correspondence serves as our formal request for relief in the form of a waiver of the MBE/WBE percentages required by the City of Chicago. NEC respectfully requests the following reduced percentages:

- 0.13% WBE; and
- 5.08% MBE

Also, NEC currently utilizes the following firms meeting the MBE/WBE requirements and would like to use them continuously for the Sole Source requirement.

- Executive Decisions (WBE); and
- System Solutions (MBE)

Due to the configuration of the Automated Fingerprint Identification System (AFIS), locating direct subcontractors with the ability and expertise to provide products or services is not possible for the above referenced agreement. NEC's AFIS is a proprietary architecture, single-purpose computer system that are specifically designed, both from hardware and software perspectives, to provide a solution to law enforcement agencies. These systems are custom configured, manufactured, implemented and supported by highly trained and specialized technical personnel.

NEC Corporation of America is a wholly owned subsidiary of NEC Corporation, a Japanese corporation. NEC Corporation holds all patents and has exclusive proprietary software rights on all NEC application programs, fingerprint matching algorithms and native fingerprint images. NEC Corporation of America is the only vendor in the United States authorized to convert proprietary data of provide database upgrade services, interfaces to external data sources or make modifications thereto.

NEC has a stated Affirmative Action Plan and it is our intent and commitment to utilize MBE/WBE and other minority vendors in connection with our operations wherever and whenever possible.

It is our hope that you will find NEC's efforts meets the MBE/WBE requirements. Thank you for the support, guidance and consideration in this matter.

Sincerely,

A handwritten signature in black ink that reads "Greg Uher". The signature is written in a cursive style with a large, stylized "G" and "U".

Greg Uher  
Director – Customer Service and Support  
NEC Corporation of America

<b>Section I: General Contract Information</b>	
Department Name	Chicago Police Department
Department Contact Name	Joel Brown
Department Contact Number	312.745.5640
Department Contact Email	joel.brown@chicagopolice.org
Contract Number	25137
Contract Subject Name	NEC Corporation of America Inc
Contract Initiation Date	03/22/2012
Original Contract Amount	\$2,513,421.00
Original Contract Expiration Date	03/22/2017
Budgeted amount for current year	\$545,357.00
Year to date expenditure	\$520,000.00
Are funds	<input checked="" type="checkbox"/> Operating <input type="checkbox"/> Capital <input type="checkbox"/> TIF <input type="checkbox"/> Grant
What is the funding strip?	
If contract modification or task request is approved, will department have enough funds to cover new expenditure?	017-0100-0574262-0154-220154 018-0100-574262-0154-220154
If no, what is the plan to address the short fall?	Yes
<b>Section II: Contract Modifications</b>	
Complete this section if you are modifying the value of an existing contract.	
Contract Value Increase	\$1,091,527.04
New total contract amount	\$3,604,948.04
New contract expiration date	3/21/2018
Goods/services provided by this contract	Professional Services

Justification of need to modify this contract	
Impact of denial	CPD would be unable to use the automated fingerprint identification system.
<b>Section III. Issue a Request for Services to a Master Consulting Agreement</b>	
Complete this section if you want to issue a request for services to a Master Consulting Agreement	
Value of planned task order request	DNA
Expiration date of planned task order request	DNA
Scope of services	DNA
Justification of need to issue request for services	DNA
Impact of denial	DNA
<b>Section IV: Assessment of Office of Budget and Management Analyst</b>	
Approve/Deny	Approve
OBM Analyst Initials	AW
OBM Analyst Name/number	Alexis White/4-8924





NECCORP-01

FISERMA

**CERTIFICATE OF LIABILITY INSURANCE**

DATE (MM/DD/YYYY)  
3/29/2017

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

**IMPORTANT:** If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER <b>Willis of Texas, Inc.</b> c/o 26 Century Blvd P.O. Box 305191 Nashville, TN 37230-5191	CONTACT NAME:		
	PHONE (A/C, No, Ext):	(877) 945-7378	FAX (A/C, No): (888) 467-2378
E-MAIL ADDRESS:			
INSURER(S) AFFORDING COVERAGE			NAIC #
INSURED  <b>NEC Corporation of America</b> 3929 W. John Carpenter Freeway Irving, TX 75063	INSURER A : <b>Travelers Indemnity Company</b>		<b>25658</b>
	INSURER B : <b>Travelers Indemnity Company of America</b>		<b>25666</b>
	INSURER C : <b>Travelers Property Casualty Company of America</b>		<b>25674</b>
	INSURER D : <b>Charter Oak Fire Insurance Company</b>		<b>25615</b>
	INSURER E :		
INSURER F :			

**COVERAGES**

**CERTIFICATE NUMBER:**

**REVISION NUMBER:**


THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
<b>A</b>	<input checked="" type="checkbox"/> <b>COMMERCIAL GENERAL LIABILITY</b>  <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR  GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input checked="" type="checkbox"/> LOC <input type="checkbox"/> OTHER:		<input checked="" type="checkbox"/>	<b>HK-GLSA-162D6431-17</b>	<b>04/01/2017</b>	<b>04/01/2018</b>	EACH OCCURRENCE \$ <b>1,000,000</b> DAMAGE TO RENTED PREMISES (Ea occurrence) \$ <b>300,000</b> MED EXP (Any one person) \$ <b>10,000</b> PERSONAL & ADV INJURY \$ <b>1,000,000</b> GENERAL AGGREGATE \$ <b>2,000,000</b> PRODUCTS - COMP/OP AGG \$ <b>1,000,000</b>
<b>B</b>	<input checked="" type="checkbox"/> <b>AUTOMOBILE LIABILITY</b> <input checked="" type="checkbox"/> ANY AUTO OWNED AUTOS ONLY <input type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> NON-OWNED AUTOS ONLY			<b>HJ-CAP-162D6418-17</b>	<b>04/01/2017</b>	<b>04/01/2018</b>	COMBINED SINGLE LIMIT (Ea accident) \$ <b>1,000,000</b> BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
<b>C</b>	<input checked="" type="checkbox"/> <b>UMBRELLA LIAB</b> <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB CLAIMS-MADE DED <input checked="" type="checkbox"/> RETENTION \$ <b>10,000</b>			<b>HSMJ-CUP-162D642A-17</b>	<b>04/01/2017</b>	<b>04/01/2018</b>	EACH OCCURRENCE \$ <b>5,000,000</b> AGGREGATE \$ <b>5,000,000</b>
<b>C</b>	<input checked="" type="checkbox"/> <b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) <input type="checkbox"/> Y/N If yes, describe under DESCRIPTION OF OPERATIONS below		<input type="checkbox"/> N/A	<b>HC2JUB-162D6443-17</b>	<b>04/01/2017</b>	<b>04/01/2018</b>	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$ <b>1,000,000</b> E.L. DISEASE - EA EMPLOYEE \$ <b>1,000,000</b> E.L. DISEASE - POLICY LIMIT \$ <b>1,000,000</b>
<b>D</b>	<b>Workers Compensation</b>			<b>HROUB-4E339258-17</b>	<b>04/01/2017</b>	<b>04/01/2018</b>	<b>See Attached</b>

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)  
Certificate Holder is included as Additional Insured as their interest City of Chicago may appear.

**CERTIFICATE HOLDER**

**CANCELLATION**

<b>City of Chicago Department of Procurement Services</b> 121 N. LaSalle Street City Hall - Room 403 Chicago, IL 60602	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.
	AUTHORIZED REPRESENTATIVE 

## ADDITIONAL COVERAGE SCHEDULE

COVERAGE	LIMITS
<b>POLICY TYPE: Workers Compensation and Employers' Liability</b> <b>CARRIER: Charter Oak Fire Insurance Company</b> <b>POLICY TERM: 04/01/2017 – 04/01/2018</b> <b>POLICY NUMBER: HROUB-4E339258-17</b>	<b>Per Statute</b> <b>\$1,000,000 E.L. Each accident</b> <b>\$1,000,000 E.L. Disease – policy limit</b> <b>\$1,000,000 E.L. Disease – each employee</b>
<b>POLICY TYPE: E&amp;O Technology</b> <b>CARRIER: Indian Harbor Insurance Company</b> <b>POLICY TERM: 07/30/2016 – 07/30/2017</b> <b>POLICY NUMBER: MTP9031210 02</b>	<b>Errors &amp; Omissions Technology: \$5,000,000 Limit / \$200,000 Retention</b> <b>Privacy &amp; Cyber Security: \$5,000,000 Limit / \$200,000 Retention</b> <b>Data Breach Response: \$5,000,000 Limit / \$200,000 Retention</b>

\*\*\* Quote \*\*\*

June 20, 2017

Joe Perfetti  
Chicago Police Department  
3510 South Michigan Avenue  
Chicago, IL 60653

Customer: 1000098227  
Contract: IDS1124

Dear Mr. Perfetti:

The term of your maintenance agreement on your NEC AFIS (Automated Fingerprint Identification System) is due for renewal. The annual maintenance charges (AMC) for 2017 will be \$505,793.86. The AMC for 2018 will be \$520,967.68. Please accept this letter as notification of the renewal of your NEC AFIS maintenance coverage effective March 22, 2017 through March 21, 2019.

2016 AMC	AMC ADJUSTMENT	2017 AMC
\$ 491,062.00	\$ 14,731.86	\$ 505,793.86
	<b>Quarterly Amount</b>	<b>\$ 126,448.47</b>
	<b>Total Annual Amount</b>	<b>\$ 505,793.86</b>

2017 AMC	AMC ADJUSTMENT	2018 AMC
\$ 505,793.86	\$ 15,173.82	\$ 520,967.68
	<b>Quarterly Amount</b>	<b>\$ 130,241.92</b>
	<b>Total Annual Amount</b>	<b>\$ 520,967.68</b>

This is not an invoice. Invoices will be sent separately from our billing team. Please review and sign below. Once a PO is received we will process an invoice.

The NECAM team is proud of our history supporting national, state and local law enforcement in their crucial roles and we are committed to providing you with excellent service and support. NEC appreciates your business and we look forward to fulfilling your future AFIS needs.

Sincerely,

*Cindy Taylor*

Cindy Taylor  
Administrative Support Specialist  
NEC Corporation of America  
Ph: 916-463-7070  
[cindy.taylor@necam.com](mailto:cindy.taylor@necam.com)




**Rahm Emanuel**  
Mayor

**Department of Police • City of Chicago**  
3510 S. Michigan Avenue • Chicago, Illinois 60653

**Eddie T. Johnson**  
Superintendent of Police

**To:** Jamie L. Rhee  
Chief Procurement Officer  
Department of Procurement

**From:**   
Jonathan L. Johnson  
Commander  
Bureau of Support Services  
Chicago Police Department

**Date:** January 26, 2017

**Subject: Request for Two (2) Year Time Extension and Vendor Limit Increase for NEC Corporation of America Inc. - PO 25137, Specification 98390**

The Chicago Police Department currently utilizes the contract, NEC Corporation of America Inc. - PO 25137 for automated fingerprint identification system storage, support and maintenance. CPD is requesting a two (2) year time extension and vendor limit increase in the amount of \$1,096,761.54 that will cover the support and maintenance for the years of 2017 and 2018. The reason CPD is requesting a two year sole source contract is because the current fleet of computers and printers will reach the end of their life cycle and CPD will need to purchase a new fleet of equipment at a cost of \$1.5 million dollars.

Below is the pertinent information in regard to the VLI request:

Current Vendor Limit (PO 25137)	\$ 2,513,421.00
Spent Amount (as of 1/25/17)	\$ 2,511,462.50
Current Age of PO (in months)	57
Annual Budget Amount (CPD)	\$ 548,380.77
Remaining Life of PO (in months)	3
Total Current Amount Remaining on Contract	\$ 1,958.50
Projected Spending for 2017 and 2018	\$ 1,096,761.54
Requested Vendor Limit Increase	\$ 1,096,761.54



## Scope of Work

Contractor must provide hardware and software maintenance and necessary system upgrades relating to the Automated Fingerprint Identification System.

### 1.1 Database Design

The following reflects the AFIS database capacities and transaction volumes.

#### Database Capacity Design

DATABASE		Total # of SUBJECTS IN DATABASE	REMARKS
AFIS	RDB-T	2,400,000	Searchable Tenprint database (10 finger)
	RDB-L	2,400,000	Searchable Latent database (10 rolled finger and day one forward 10 Slap finger)
	LDB	27,000	Unsolved Latent database (both finger and Palm)
Palm	RDB-L/P	1,000,000	Searchable Palm Print database ; (Thenar, Hypothenar, Interdigital, Writers and Upper Hand)
NIST Document Archive System	NIST Type 1,2,4	7,000,000	Current and new NIST Type 1,2,4 records
	NIST Type 15	5,000,000	New NIST Type 15 (Palm) data

### Transaction Volume Design

TRANSACTION	DAILY	RESPONSE	OP. HRS	REMARKS
10P Submission	1,800	-	24 HRS	From Livescan and Card Scan
TI	1,450	5 min.	24 HRS	Tenprint Inquiry
LI	50	60 min	16 HRS	Latent Inquiry finger (Includes SLAP matching)
LI-P	15	60 min	16 HRS	Latent Inquiry Palm
T/LI	1,800	60 min	24 HRS	Tenprint to Latent Inquiry
T/LI-P	1,300	60 min	24 HRS	Palm to Latent Palm Inquiry
L/LI & L/LI-P	15	60 min	16 HRS	Latent to Latent Inquiry (finger & Palm)
MID 1:N	1,000	3 min.	24 HRS	Two Finger Search from NIST Mobile ID device
Archive	250	N/A	24 HRS	Archive System queries (view, print, etc.)

### Fingerprint Workstation and other external Devices Design

Device		REMARKS
GWS-T/V/INSW	1	Full function Tenprint, Verification and NIST Scan Workstation
GWS-T/INSW	2	Tenprint and NIST Scan Workstation
GWS-V	2	Verification Workstation
GWS-L	2	Full function Latent input and Latent Verification Workstation (Finger& Palm)
Mobile ID	N/A	Using CrossMatch/CDI MV100 and CDI S&F that is in place today (Not included as part of this proposal) and interface capability with all other NIST compliant mobile ID devices.
IMARS	1	Web based AFIS Integrated Monitoring Administration & Reporting Server

The Configuration includes the following functionality:

- ESSO (Extended Send Search to Other) which allows the CPD to perform Latent searches against the Illinois State Police NEC AFIS (in place today)
  - The CPD AFIS has an ESSO interface the ISP AFIS that allows reciprocal **fingerprint** latent searches (LI only – does not include LI-P).
- Web based Print Server client to print cards from Archive at each workstation.
- 10 finger Tenprint database for Tenprint searching.
- Palm print matching and storage.
- Slap print matching and storage.
- NIST Tenprint submission to the ISP AFIS (in place today)
  - The CPD AFIS automatically sends the NIST Type 1,2, 4,10 and 15 records to Illinois State Police (ISP).
- Livescan connectivity and all necessary customization
- CHRIS/CLEAR CCH interface (oracle queuing)
  - Allows an AFIS interface with the existing CLEAR Records Management Systems (i.e. RMS, CCH - computerized criminal history, booking system, mug shot system, etc.). This “lights out” (minimal human intervention) interface will eliminate duplicate data entry of arrest data and provide AFIS with potential 1:1 candidates, etc. In short, this interface will make the identification process faster, more accurate and more efficient.
- IMARS – Integrated Monitoring Administration & Reporting Server
- Workflow modifications to provide “Lights Out” processing for Mobile ID transactions
- Manual Tenprint functionality – Card Scan for work flows including tenprint errors, Dead prints and injured prints. Card scan must interface with AFIS to generated NIST record.
- Enhanced Latent functionality to include Palm and SLAP matching along with new editing tools
- ELMA (Enhanced latent Matching Algorithm) for both Rolled and Slap.

## 2.1 STANDARD FEATURES

The following capabilities are included:

- Quality Control
  - Search Accuracy
  - Automatic Verification
-

- Automated Workflow
- NIST Archive
- New Matching Technologies
- Full Palm Print Matching Capability
- Easy to Use Workstations
- Open Systems Compliance

## **QUALITY CONTROL**

When AFIS receives a tenprint transaction from a live scan or a card scan device, the system sends the image data to the Image Process Controller (IPC). The IPC performs the following processing.

- Quality Control (QC)
- Automatic Classification (AC)
- Feature Extraction (FE)
- Finger Sequence Check (FSC)

Quality Control (QC) features that are built into Auto Classification (AC) and Feature Extraction (FE) will be tightly linked to the ultimate purpose of the matching accuracy. The automated QC process within AC/FE builds the ridge direction and zone quality map of the rolled impressions, slap (plain) impressions and palm print images. The term "zone" refers to a square of eight pixels by eight pixels image area, and QC assigns a quality rating (called zone quality) from the confidence rating of the ridge direction within the zone.

The end result of the automated QC process is to assign three levels of aggregate quality codes (A, B and C, with A being the best) to rolled and plain impressions. QC also assigns 5 levels of quality codes to palm prints (A, B, C, D, F, with A being the best). Low quality prints can be defined to be a submission of predominantly C quality for finger and F quality for Palm. For instance, if a majority of rolled and slap prints are of C quality, or the thumbs and index fingers are all of C quality, there is smaller probability that the search result is at an acceptable level of certainty.

The FE process automatically sets the axis for each incoming ten print image and also computes the confidence level of the axis detection.

The Finger Sequence Check (FSC) is a series of matches between the rolled and plain impressions, to detect the incorrect sequence of rolled prints in the submission. FSC consists of multiple one-to-one

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minutia matches between rolled and plain impressions. Thus, it can detect if the same finger has been rolled twice or if any finger has been rolled in the wrong sequence.

When the FSC detects finger sequence errors, it flags the transaction with the low FSC confidence rating.

When the overall quality rating (minutia quality and FSC confidence rating) is below the threshold, the transaction will be sent to VQA for manual operator intervention and decision.

The system has numerous parameters that are associated with QC processes that can be modified quickly and easily by a system administrator. By simply modifying these QC parameters AFIS provides a wide range of manual intervention levels, from complete lights-out to full manual QC review by tenprint technicians.

## **SEARCH ACCURACY**

The system contains a relational encoding and matching algorithm. The term relation refers to ridge counts between minutia points. For each minutia point, ridge counts to its four nearest neighboring minutia points are recorded and used for calculation of the matching scores.

The AFIS tenprint-to-tenprint search consists of two steps: Pattern Search and Minutia Matching.

The Tenprint-to-tenprint search of the AFIS system uses a feature matching mechanism called the Pattern Search (PS). Pattern Search is a process that compares Pattern Set Record (PSR) of a search print and a given file print, and decides whether to send the file print to the minutia matching. Pattern Search is performed against the entire ten print database, and selected minutia data are sent to minutia matching.

PSR is generated for each incoming tenprint submission by the AC process, and stored in the ten print file when retention is indicated. PSR is a dataset that contains a set of fingerprint feature information that is separate and distinct from those used for the minutia matching. No demographic data is included in PSR.

As opposed to only the data used for minutia matching, such as the coordinates of ridge endings and bifurcations, PSR contains a unique feature metric called Eigenfeature value, calculated from ridge flow matrix. Accuracy of Pattern Search comes from the accuracy of Auto-Classification algorithm that generates the fingerprint feature metrics that are stored in PSR.

While the database contains minutia data of ten fingers, the system matches minutia data of selected fingers. Finger selection is based on the quality of minutia data of the search fingerprint and file print in the database. This is based on the general principal that better minutia quality provides more reliable match scores. The system includes the 10-finger Tenprint database and matches three fingers on average,

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depending on the quality of the search print and file print. The number of selected fingers dynamically changes during the matching process. The matching process selects more fingers to match if the quality of the search print is marginal. Conversely, if the quality of a particular file print is marginal, the matching process tends to match more fingers for this file print. The 10-fingers will consist of rolled fingers 1,2,3,6,7,8 and slap fingers 1,2,6,7.

The term "quality" not only refers to the image and minutia quality, but also includes the fingerprint sequence confidence rating described previously. When the fingerprint sequence rating is below a threshold, then the matching range is increased.

Minutia matcher generates a candidate list along with scores. The matching score array is then sorted for analysis. The analysis that is applied to the score array is based on an algorithm called "Dynamic Threshold". Dynamic Threshold inspects the score array in the tenprint-to-tenprint search result, and determines the probability of matches based on the score spread, or score distribution, and according to the criteria, marks a candidate or candidates as potential for review. Dynamic Threshold logic has its own set of configurable parameters.

In addition, the system incorporates a full hand palm which includes the Thenar, Hypothenar, Interdigital, Writers and Upper Hand (joint/phalanges) minutia database for latent print matching. This provides CPD the ability to search a latent print against the database of the full palm. Any area of Palm can be selected for matching or the all areas of the Palm can be selected.

Along with Palm matching, the Slap minutia database which is comprised of the feature sets and images for the Slap or plain impressions taken with the rolled impressions during fingerprint acquisition. This provides CPD the capability to search a latent print against the database of both rolled and slap impressions providing for up to 20 fingers per subject for latent searching. The population of the Slap minutia database will be a day one forward approach.

## **AUTOMATIC VERIFICATION**

Coupled with the best selectivity resulting from relation-based matching, automated verification processing allows the system to make an automated hit/no-hit decision on tenprint search candidate lists. This is done through a combination of the dynamic threshold algorithm that evaluates fingerprint-matching score of candidate(s) and 1:1 matching of additional fingers. It is estimated that 98% or more of tenprint submissions can be auto-verified by the proposed AFIS system. This significantly reduces verification operator workload.

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## **AUTOMATED WORKFLOW**

AFIS receives fingerprint images, automatically extracts minutiae, automatically defines pattern types, searches the database, and reports accurate results without human intervention. CPD requires all fingerprint submissions to pass the quality control threshold. In the event a print does not meet this threshold, the AFIS system will send this print to a quality control operator.

## **NEW MATCHING TECHNOLOGIES**

The CPD AFIS readily uses the newest matching technologies, including:

- Slap prints in the database for latent matching to increase latent accuracy
- Mobile ID Ready. The system is able to match transactions that contain 1 to 10 fingers (TPIS transactions), for either a one to one match (1:1) or a one to many (1: N) match in a lights out mode.
- Full Hand Palm Matching. The system comes ready for latent palm matching and the ability to store up to 1,000,000 palm sets. Increases in the palm database will need only increased storage and matching resources.

## **FULL PALM PRINT MATCHING CAPABILITY**

AFIS consists of a full Palm registration and matching. CPD must have the capability to search the full hand (Thenar, Hypothenar, Interdigital, Writers and Upper Hand). This functionality increases and improves latent hit rates. AFIS receives the Type 15 record as part of the NIST package from Livescan or card scan and processes the record as part of the Automated Workflow.

The inquiry profile of each of the Latent Palm Inquiry (LI-P) includes not only the selection of 5 divisions, but also what is called the angle of rotation for the matching tolerance. For the complete cold search inquiry profile, the degree of this angle is taken to be 360 degrees (+ or - 180 degrees both directions).

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## AFIS WORKSTATIONS

The system uses "standard" AFIS verification workstations that can be utilized for job queue management, database maintenance functions and job verification, including those from the tenprint and unsolved latent searches.

The AFIS system maximizes user efficiency and productivity while at the same time minimize operator error.

Features must include:

- GWS-TVN (Global Workstation – Tenprint Analysis, Verification & NIST Card Scan) layout customization
- Efficient input, using a mouse, keyboard, and icons
- Enhanced command/menu flow control to minimize the number of required screen changes
- A free-format capture capability for ten-fingerprint capture capability from fingerprints that lie outside the designated areas for flexible fingerprint capture and quality control
- An abundance of combination commands for smooth, seamless operation
- Efficient and effective monitoring and scheduling of transactions for priority processing flexible scheduling control
- A high-quality image display screen to facilitate verification productivity
- Microsoft Windows XP Professional or latest version based workstation
- AFIS supports both locally and remotely connected workstations

## OPEN SYSTEM COMPLIANCE

AFIS is designed to operate in an open architecture environment and with commercially available software.

**Table-1 AFIS Software Platforms**

<b>Operating System (OS—Server)</b>	Linux, Windows 2003 Advanced Server
<b>Operating System (OS—Workstation)</b>	Microsoft Windows XP Professional
<b>Network</b>	TCP/IP
<b>Language(s)</b>	ANSI-C , C++ and C#
<b>On Line Transaction Processing</b>	TUXEDO

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<b>Relational Database Management System</b>	ORACLE 10g
<b>Graphical User Interface</b>	MS-Windows

### 3.1 Database Backup Strategy

The CPD AFIS Palm must use FC SAN-RAID disk drives with built-in redundancy to minimize impact on CPD operations should a failure occur. Netback up and Acronis will also be used with backing up all files.

RAID-5 is the industry standard storage practice, which offers a high level of reliability in data storage. In RAID-5 storage configuration, the data as well as the data parity is spread across all the drives that form one RAID-5 unit. In case of a single media failure in RAID-5, the defective drive will be replaced with the new drive and the data rebuilding occurs on the new drive from the data parity. This whole process is transparent to the overall system operation and is performed while the system is up and running (Hot swap). For the proposed CPD AFIS Palm upgrade the RAID-5 protection will provide data storage reliability.

FC-SAN storage and FC-LTO3 based tape library, along with the Legato Networker Backup and EMC SnapView software provide the back-up and recovery strategy for the CPD AFIS system.

The AFIS system uses Oracle™ RDBMS as a key database engine. The backup software integrated with Oracle, enhances the automated Oracle online backup features effectively. Oracle online backup feature (Hot backup) allows complete uninterrupted system operation even if the backup routine is in progress. The online backup capabilities not only permit transaction search processing to continue, but allows database updates (registrations, deletes) while the backup is in progress.

Due to the Daily Online (Hot) backup methodology the system will always be operational. The back up process will not affect the system uptime.

The new automated online backup methodology is completely transparent from the user operations. The back up process is initiated through a preset scheduling function during non-peak workload hours.

The data backup software checks for the media availability, and checks if the appropriate 'Day' media is in the tape library. The logic does not allow for any overwrites unless the tape media is defined for reuse.

AFIS has multiple REDO log groups, with multiple members in each group, spread across different controllers and drives. The REDO log members in a given group are mirror copies of each other; in case of failure of any REDO log member, the database is still protected.

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Archivelog files are the only means to the point of recovery of the database in case of failures. During the recovery process, backup must be restored using tape or mirror volumes, and the Archivelog journals are applied to roll forward. The AFIS system will be delivered with Archivelog Mode ON (enabled).

As a baseline system protection solution, the AFIS will contain a data and system recovery strategy, requiring all system saves and database saves to generate three generations of backup media. The master set (active set) is stored on-site, and the copy set (inactive or previous generation sets) is stored at a user designated off-site storage. System and application program saves are done on a periodic basis or at system update.

The database save utilizes three generations of incremental daily backups, each with master and copy dual backups. When one generation of backup completes its cycle, the copy set of the generation will be transported to off-site storage.

With the Oracle Archivelog feature and hot backups, database offline saves and system downtime are eliminated. With the Online backup process, the entire database backup is distributed over a period of time (e.g., one week). This means that during one week the entire database is backed up part-by-part while the application system is online and active. This potentially reduces the amount of data to be backed up daily and effective media management can be achieved.

Database constitutes the major storage area; if it is backed up as mentioned above, the remaining system area backup will be a small amount of data and will require less backup time.

The Oracle archive logs (journals) are backed up twice daily on different media along with the part of the database. Any database updates or changes are recorded by Oracle in the Archivelog files through REDO logs.

#### **AUTOMATIC FAIL-OVER HIGH AVAILABILITY**

The AFIS system must incorporate redundant clustered servers to provide immediate fail-over in the event of a problem. This fail-over must be transparent to the user and allow for high availability of the AFIS system and minimal downtime due to server component failures.

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## **4.1 Tenprint Processing**

The tenprint workflow begins when a transaction is sent to the Global Transaction Controller (GTC). A transaction can be generated from a variety of ways; from a Live Scan, the Card Scan System, Mobil ID Device or another AFIS system. The GTC verifies the transaction and initiates the workflow designed for that Type of Transaction (TOT). The GTC and AFIS workflow manages a transaction within the AFIS operational environment based on the TOT, priority and input device.

First the Type 1 and 2 text data is validated. If the data validation detects an error, then the transaction is rejected and a notification message is generated. Once the text data passes the validation check the GTC sends the transaction to image quality evaluation, automatic pattern classification and feature extraction at the Image Process Controller (IPC). If necessary, and depending on the parameter settings, a manual quality check is performed.

The GTC will request a name search from the CLEAR System. The CLEAR System would pass the IR# of the potential candidate(s) based solely on the name search. If there are name search candidates a 1:1 match is performed on those candidates. The system performs a 1:1 matching of the name search candidates (called Automatic Verification) and if the 1:1 can not determine the match, the transaction will be queued for manual verification. If the 1:1 match results in a positive identification, the GTC then sends an identification message back to CLEAR. If the 1:1 match does not result in identification, the GTC sends the transaction for a full tenprint-to-tenprint search.

The verification process will result in either identification or non-identification and the proper message will be sent. The tenprint and palm print will be matched against the unsolved latent database. In the case of non-identification, the transaction will then be added to the AFIS and Archive database as a new record. When the subject is identified the record is added to the Archive database under that IR/CB number and a determination of rolled print substitution is performed. If the duplicate search identifies the need for a consolidation, the transaction will be sent to the consolidation queue.

## **5.1 Latent Processing**

The latent process consists of scanning, capturing or importing a latent image. Importing functionality must include interface from Foray More Hits Application. The transaction goes to the image processing stage. The AFIS system has an array of image processing tools available for the latent examiner to obtain the best results possible.

Once a latent image is processed and a minutia set created, the transaction is searched against the Rolled & Slap database. It can also be sent to the ISP AFIS for searching. After the verification process, the latent

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can be added to the unsolved latent database. The Latent palm processing and matching is the same as Latent finger processing with the exception of searching the ISP AFIS.

## **6.1 NIST Archive**

AFIS contains a NIST Archive. The NIST Archive allows for the storage of all incoming NIST records. The database stores demographic and original image data from all events submitted, based on the workflows set up for each type of transaction. The system has the ability to store information that comes in the NIST record envelope from NIST Types 1, 2, 4, and 15 records, display and print all images, and manage archived records using a variety of management tools. The system includes delete, change and consolidation functionality for all NIST components.

Archive Browse functionality is provided for each workstation and allows the displaying of NIST images. Images from the archive can be downloaded and printed at the workstation so that all levels of detail (including level 3) can clearly be determined and used by latent operators in their identification process.

## **7.1 AFIS Functionality**

The overall application architecture must provide real-time AFIS performance through three (3) primary software applications:

- Automated Tenprint Functions “minimal manual intervention” processing. Minimal manual intervention to include AFIS edits, verification and error correction operations.
- Manual tenprint functions – card scan for dead prints, injured prints and error processing
- Manual Latent Fingerprint and Palm print Functions
- Automated Latent print functions via Foray More Hits interface
- Mobile ID system for either 1:1 or 1: N matches

The following outlines the AFIS system functionality which streamlines identification processing for the CPD.

### **AUTOMATED WORKFLOW MANAGER (AMF) - TENPRINT FUNCTIONS**

An Automated Workflow Manager (AMF) enables a “lights-out” identification processing for high volume tenprint operations. The AMF will deliver automated processing by providing search, launch and initiation

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of subsequent processes based on your needs. This workflow handles all national fingerprint exchange inputs such as:

- NIST-compliant live scan submissions
- NIST-compliant card scan transactions (NSW)
- NIST-compliant Mobile ID input devices
- Roll print substitution

The Feature Extraction (FE) software automatically extracts core and axis for the rolled fingers without manual intervention or operator monitoring assistance and performs minutia count. The Automated Classification (AC) software identifies the fingerprint pattern type according to the NEC AFIS classification scheme and seamlessly searches the databases, returning a response to the operator.

**Table-2 Automated Tenprint Functions**

Function	Description
Tenprint capture	Captures 14 card fingerprint images with full hand and writers palm in WSQ, 8 bit grayscale from IQS compliant scanner device: live scan or card scan formatting record into NIST Type 1, 2, 4 and 15.
Automated Feature extraction	Automated ridge & minutia encoding, automated core detection, automated axis detection, automated minutia count & print quality class
Automated Classification	Automated pattern classification of input fingerprints
Automated Name search (optional)	Name search from AFIS is provided
Automated WSQ Compression	Automatically compresses the fingerprint record (14 NIST images) using the FBI certified compression algorithm
Automated Hit thresholds	Enables the system to determine "hit no-hit" decisions based on numerical setting thereby reducing manpower needs to review every match
Automated candidate lists	Searches & compiles database candidates with scores and fingerprint images
Automated Verification	Automatically determines "hit no-hit" by 1:1 match of search & database record and completes identification process without operator intervention.
Visual Quality Assurance	Automated quality control check of NIST tenprint: detection of poor quality prints routes job to quality control queue for operator review and action.
Tenprint re-inquiry	Enables an operator to re-initiate a tenprint search using the same input print with different demographic data.
Verification & charting	Displays side-by-side prints of search print and file print that are rank-scored through the database inquiry. Allows an operator to chart points of comparison between the prints.
Tenprint registration	Adds a rolled & slap tenprint and data elements to the rolled and slap print databases.
Tenprint inquiry against the unsolved crime database	Performs a tenprint inquiry against the unsolved latent database including the unsolved palm database, producing a candidate list, descending scores and respective images.
Tenprint update	Enables an operator to update the demographic or descriptive data registered in the rolled print databases.
Tenprint delete	Enables an operator to delete the registered file print from the rolled print databases, if authorized by the system administrator.
Tenprint combination command	Five-step process that streamlines "end-to-end" query and database registrations from a single entry screen.

Roll-print substitution	Enables automated finger substitution to ensure best quality database print
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## 8.1 LATENT FUNCTIONS

The Global Workstation Latent (GWS-L) with Latent Examiner Software (LEXS) allows direct input of latent fingerprint images, resulting in accurate minutia extraction. In addition to direct entry, the GWS-L gives the latent examiner complete interactive control over manual processing of the latent image. A camera connected to the GWS and will be used as the latent input device to capture latent images directly from lifts, photographs and crime scene evidence. The latent application software delivers superior image processing tools, as well as the option to designate multiple axes for each latent search providing 360 degree searching.

**Table-3 Latent Functions**

Function	Description
Latent capture	Captures direct entry crime scene lift or tracing.
Latent enhancements	Latent Examiner Software (LEXS)
Latent inquiry	Searches a crime scene print against the rolled tenprint database.
Latent re-inquiry	Enables an operator to modify the demographic & image data in a stacked latent print and re-run the inquiry without re-entry of the image.
Latent to latent inquiry	Search a latent search print against the unsolved latent database.
Latent to latent inquiry #2	Search a file latent print against the unsolved latent database without re-entering the print.
Latent registration	Adds an unsolved latent print & data elements to the unsolved latent database.
Latent combination command	Three-step process that streamlines "end-to-end" query, database registrations, and subsequent search from a single screen entry.
Automated feature extraction	Automated ridge & minutia encoding, automated core detection, automated axis detection, automated minutia count.
Verification & Charting	Displays side-by-side images of search print and candidate file prints that are rank-scored through the database inquiry. Allows an operator to chart points of comparison between the prints.
Automated candidate lists	Searches & compiles database candidates with scores and fingerprint images
Latent Delete	Allows an operator to remove/delete any latent record in the unsolved latent database, if authorized by the system administrator.
Latent Update	Allows an operator to modify demographic data in the Control Database (CDB) database
Latent Search of Other NEC AFIS (ESSO)	Enhanced SSO - An AFIS latent connection between CPD AFIS and ISP AFIS. No re-scan or re-edit of latent needed. The same Latent is automatically sent to the ISP AFIS when selected. Candidate lists are sent back to the CPD GWS-L from ISP.
Illinois State Police Database Search	

## 9.1 NEC NIST ARCHIVE FUNCTIONS

**Table-4 NEC NIST Archive Functions**

Function	Description
NIST Fingerprint	Types 1, 2, 4, and 15
Verify Document	Determines whether a specific document exists in Archive
Query on Document ID	Local queue (Stores locally when connectivity to GTC is not possible)
Consolidate Document	Called "Move" in Fingerprint Archive
Delete Documents	Delete only in Fingerprint Archive
Verify Folder	Determines whether a specific folder number exists in Archive
Create Folder Number	Allows the authorized user to create a new folder number in Archive
Retrieve Folder Contents (Document List)	Provides a list of documents contained within an existing, specified folder and allows the authorized user to select which documents to view
Modify Folder Number	Allows the authorized user to change the identification number of an existing folder
Consolidate Folder & Contents	Called "Move" in Fingerprint Archive
Delete Folder & Contents	Delete only in Fingerprint Archive
Name Search	Can perform full search on any demographic fields
Add User Profile	Allows the authorized user to create a new account number, enter profile information, and set access privileges for a new user
Edit User Profiles	Allows the authorized user to edit profile information and access privileges for an existing user account
Delete User Profiles	Allows the authorized user to remove an existing user account from Archive
Change Own Password	Allows the user to modify his/her Archive password

Function	Description
Change Password for User	Allows the authorized user to modify the Archive password of another user (e.g., when a password is lost/forgotten)
User Authorization Levels	The hierarchy of users within each Work Group in Archive: Basic User, Supervisor, Manager, or Administrator
Work Group/Unit Classification & Filtering	The grouping of users into separate classes, also known as the Bureau Code. Such classification prevents users in disparate departments from accessing information for users outside of their own Work Group.
Inquire Only and Inquire/Update Levels	Overall availability of Archive functionality to an individual user. Inquire only, allows the user to view Archive data, but disallows any action that may modify Archive content; Inquire/Update allows the user to view and modify Archive content.
Electronic User's Guide + Context-Sensitive Help	Availability of online and content-sensitive help to Archive users
Printing NIST Records to Compatible Print Servers	Functionality that allows the user to send Archive documents to a NIST print server. High-quality NIST image/data are reproduced on standard 8x8 fingerprint cards
Printing to Local Printers	Functionality that allows the user to send Archive documents to a local printer. Lower-quality NIST images/data are reproduced on standard office paper
WSQ Plug in Support (Aware, Inc.)	NIST document display
AccuPrint Plug in Support (Aware, Inc.)	For local printing of compressed images. Improved image quality over standard printer drivers.

## DATABASE MAINTENANCE FUNCTIONS

The Global Workstation (GWS) provides features and capabilities that allow an operator to display and enter text and image data and it streamlines the identification processing for efficiency. The GWS provides advanced operator functions for selecting and sorting displayed entries using various filters. The following features are required as operator tools and enhancements.

**Table- 5 Database Maintenance Functions**

Function	Description
Display a File Print	Displays a record registered in the database
Display a Search Print	Displays a record not yet registered in the database
Display a File Print vs. File Print	Displays two database records side by side
Display a Search Print vs. Search Print	Displays two input records side by side
Display a Search Print vs. File Print	Displays an input record and database record side by side
Display the Job List	Displays all jobs currently in the system
Display the Stack List	Displays all input records
Display Transaction List	Displays all jobs needing operator intervention

## **10.1 SLAP MATCHING & REGISTRATION**

The AFIS system provides the capability to incorporate automatic capture, storage and matching of slap prints. It is often noted that some slap (plain impressions) on a tenprint card are generally better quality than rolled prints of the same fingers.

Selectable database category (roll/slap)

- Automatic slap image cropping
- Rolled and slap image display
- Effective tool for latent and tenprint inquiry
- Improved latent and tenprint hit rates

Slap fingerprints (slaps) are taken by simultaneously pressing the four fingers of one hand onto a scanner or fingerprint card. Slaps are also known as four-finger simultaneous plain impressions.

## **11.1 FULL HAND REGISTRATION & MATCHING**

This functionality gives the CPD the capability to search the full hand (Thenar, Hypothenar, Interdigital, Writers and Upper Hand).

## **12.1 IMARS**

### **MAIN SCREEN**

The I-MARS Main screen ("Home" tab) displays the following separate windows:

### **SERVER SERVICE STATUS**

The Server Service Status window displays the status of system components. The window prompts the administrator immediately if there is an error. It also provides detail information of the status if you double click the image of error component displayed in the window. This instant notification functionality prevents delay in problem resolutions and facilitate smooth operations on a day-to-day basis.

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## **AUDIT TRAIL**

The Audit Trail function provides the ability to display the processing history and results of transactions in a 24-hour time scale for a selected TCN. It has the ability to display the start/end time of the activity with status. It also will display operator ID, terminal ID and activity report if you click on the processing status.

## **TRANSACTION MONITOR**

The Transaction Monitor window displays the current status of transaction processing. This display area assists in monitoring server throughput and operator workloads and efficiency. The monitoring tool is displayed in green, yellow and red so that a trend of increase of throughput and workloads can be detected easily.

## **TENPRINT AND LATENT BROWSE SEARCH**

This Browse Search function provides the ability to display fingerprint image of selected tenprint finger number, latent or both images side-by-side. All ten-finger images are displayed when selecting tenprint only. It also displays zone, core/axis and minutia and provides the ability to change the color of background, axis and others.

## **EVENT BROWSER**

The Event Browser window displays error notifications from system application. There are five levels of notifications: 1) message notification to inform of the activity status, 2) warning notification, 3) alert notification, 4) error notification, however, it is possible to continue normal operations, and 5) critical error notification to inform of a system critical problem. Double clicking the notification will display a separate window with knowledgebase to let you know what caused the error and what action to take to resolve the problem.

## **REJECT NOTIFICATION**

The Reject Notification window displays notifications when IPC data aborts or when an operator rejects data at VQA. TCN will be entered to the Audit Trail window from the JobNo. in the Reject Notification screen. Then, the transaction status is displayed based on the processing phases on a 24-hour time scale.

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## **I-MARS CAMERA**

This window displays images from the web camera that can be set up in various locations of a customer site and enables monitoring of daily operations.

## **I-MARS VIDEO**

This function lets an operator view various video images. It offers Web connection capability and is fully customizable.

## **BROADCAST MESSAGING**

The I-MARS provides an electronic bulletin board to flash special announcements or important news. This screen can be customized to select what to display.

## **Global Menu Screen**

The I-MARS Global Menu screen ("Global Menu" tab) provides the following functions:

## **ADMINISTRATOR**

The administrator function offers the following: 1) Auth Administrator, 2) Command Administrator and 3) UAF Report. The auth administrator function allows centralization of UAF management by providing the ability to modify operator permissions, create new operators, change user ID and password, and many other UAF management tasks. The command administrator provides the ability to execute various commands without accessing the system component itself to type the command lines. The UAF report displays the current operator information for verifications.

## **COMMUNICATION**

The Bulletin Board function provides the ability to send and receive message notifications between operators and administrators, using the Internet Explorer browser. This instant message functionality provides a more effective tool for the operations staff to communicate much easier.

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## **DATABASE STATISTICS**

The following information is obtained from the Database Statistics: 1) Transition of Workload (joblog status), 2) Database Information and 3) AMR Information. The joblog status report provides the ability to verify operators' joblog status by selected dates and job functions. The database information displays statistics by dates, types and others and assists in monitoring workload status. A bar chart can also be displayed in a table format and it will provide printable joblog detail report. The Average Matching Ratio report offers detail information by selected dates and job type.

## **KNOWLEDGE BASE**

The knowledge base provides information to assist with daily operations of system administration and management. If there is an error, the knowledge base window can be displayed. An operator can obtain the error code, cause of the error and what action to take to resolve the problem quickly. This database is filled with knowledge based on the actual daily operations and will be useful for troubleshooting. It also provides a search engine capability to look for related information.

## **REPORT SCREEN**

The I-MARS Report screen ("Yesterday Report" tab) provides the following information of the activities performed the day before:

## **DATABASE STATISTICS**

The same as in the Global Menu screen, the following information is obtained from the Database Statistics: 1) Transition of Workload (joblog status), 2) Database Information and 3) AMR Information. The joblog status report will provide the ability to verify operators' joblog status by selected dates and job functions. The database information displays statistics by dates, types and others and assists in monitoring workload status. A bar chart can also be displayed in a table format and it also provides printable joblog detail report. The Average Matching Ratio report offers detail information by selected dates and job type.

## **JOBLOG STATUS BY OPERATOR**

It provides the ability to verify joblog status by inquiry, tenprint or latent. It displays the total number of joblog per operator. Job types are color-coded which makes the viewing of the status easier.

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## **PEAK TRANSACTION REPORT**

This report displays a line chart to show the timeframe of peak transaction. The hourly-based chart assists in verifying changes in the amount of transaction volume throughout the day. It will also be displayed by inquiry, tenprint or latent.

## **REJECT NOTIFICATION**

This will be the same as in the main screen, the Reject Notification window displays notifications when IPC data aborts or when an operator rejects data at VQA.

## **WORKLOAD DIAGNOSTIC REPORT**

This report provides the information of workload by displaying the ratio analysis, compared with the contracted amount. It also assists in monitoring the system throughput and performance of the day-to-day operations.

## **ARCHIVE**

The following will be included in Archive.

### **Database**

Fingerprint to 7M Records

Palmprint to 5M Records

NEC Archive License

\*A typical record at CPD includes NIST Type 1,2,4,10,15 data.

### **Hardware**

(2) Disk Array Enclosure

(30) 450GB 15k RPM FC 4Gbps 3.5-in HotPlug Hard Drive

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*Joseph Papalato* 26-Jan-17