REQUEST FOR PROPOSALS FOR

Computer Aided Dispatch System

ISSUING OFFICE

Pennsylvania Turnpike Commission

Operations and Incident Response

RFP NUMBER

08-10350-3631

DATE OF ISSUANCE

June 24, 2008

REQUEST FOR PROPOSALS FOR

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PART I

GENERAL INFORMATION FOR PROPOSERS

I-1. Purpose. This request for proposals (RFP) provides interested PROPOSERs with sufficient information to enable them to prepare and submit proposals for consideration by the Pennsylvania Turnpike Commission (PTC) to satisfy a need for replacement of an existing Computer Aided Dispatch System (CADS).

I-2. Issuing Office. This RFP is issued for the PTC by Operations and Incident Response. The contact person for the RFP is:

Jeffrey Beard Traffic Management Systems Specialist Pennsylvania Turnpike Commission P.O. Box 67676 Harrisburg, PA 17106-7676 (717) 939-9551, ext. 4816 Fax: (717) 986-8733 jbeard@paturnpike.com

The Issuing Office shall be the sole point of contact in the PTC for this RFP. Prospective bidders shall not contact any other person within the PTC regarding any aspect of this RFP.

I-3. Scope. This RFP contains instructions governing the proposals to be submitted including:

- material to be included in the proposal;
- a description of the service to be provided;
- requirements which must be met to be eligible for consideration;
- general evaluation criteria; and
- other requirements which must be met by each proposal.

I-4. Problem Statement. The Pennsylvania Turnpike Commission has identified the need to upgrade its existing Computer Aided Dispatch System (CADS) to better handle the management and response to incidents that occur along the Pennsylvania Turnpike. The existing CADS, located at the PTC operations center, is the primary incident data entry application for the PTC's Traffic Operations Center (TOC) staff. The CADS is one of the PTC's major tools for the management of traffic.

I-5. Type of Contract. It is proposed that if a contract is entered into as a result of this RFP, it will be a Fixed Price contract paid by milestone progress. The PTC may in its sole discretion undertake negotiations with PROPOSERs whose proposals based on the evaluation of price and other factors show them to be qualified, responsible, and capable of performing the work.

I-6. Rejection of Proposals. The PTC reserves the right to reject any and all proposals received as a result of this request, or to negotiate separately with competing PROPOSERs.

I-7. Subcontracting. Any use of subcontractors by a PROPOSER must be identified in the proposal. During the contract period, use of any subcontractors by the selected PROPOSER that were not previously identified in the proposal, must be approved in advance and in writing by the PTC.

A firm that responds to this solicitation as a prime contractor may not be included as a designated subcontractor to another firm that responds to the same solicitation. **Multiple responses under any of the foregoing situations may cause the rejection of all responses of the firm or firms involved.** This does not preclude a firm from being set forth as a designated subcontractor to more than one prime contractor responding to the project advertisement.

I-8. Incurring Costs. The Commission is not liable for any costs the PROPOSER incurs in preparation and submission of its proposal, in participating in the RFP process (e.g. oral presentations) or in anticipation of award of contract.

I-9. Mandatory Pre-proposal Conference. A mandatory pre-proposal conference will be held on Monday July 21, 2008 at 10:00 a.m. in the Large Board Room at the Turnpike Central Administration Building, 700 South Eisenhower Blvd, Middletown, PA. The purpose of this conference is to clarify any points in the RFP, which may not have been clearly understood. Questions should be forwarded to the Issuing Office prior to the meeting to ensure sufficient analysis can be made before an answer is supplied. Written questions should be submitted to the Issuing Office at the address indicated above to be received no later than Monday July 14, 2008 at 3:00 p.m. In view of the limited facilities available for the conference, it is requested that representation be limited to a maximum of three (3) individuals per PROPOSER. The pre-proposal conference is for information only. Answers furnished during the conference will not be official until verified, in writing, by the Issuing Office. All questions and written answers will be issued as an addendum to and become part of this RFP. When answering questions submitted in writing prior to the Pre-proposal Conference, the PTC will not identify the authorship of such questions.

FAILURE TO BE REPRESENTED AND SIGNED IN AT THIS MANDATORY PRE-PROPOSAL CONFERENCE WILL BE CAUSE FOR REJECTION OF PROPOSAL.

I-10. Addenda to the RFP. If it becomes necessary to revise any part of this RFP before the proposal response date, addenda will be posted to the PTC's website under the original RFP document. It is the responsibility of the PROPOSER to periodically check the website for any new information or addenda to the RFP.

The PTC may revise a published advertisement. If the PTC revises a published advertisement less than ten days before the RFP due date, the due date will be extended to maintain the minimum ten-day advertisement duration if the revision alters the project scope or selection criteria. Firms are responsible for monitoring advertisements/addenda to ensure the submitted proposal complies with any changes in the published advertisement.

PROPOSERs shall include a copy of all addenda with their bid package. Bid packages without copies of all addenda attached may be rejected by the PTC without further processing.

I-11. Response. To be considered, proposals must be delivered to the Pennsylvania Turnpike Commission's Contracts Administration Department, Attention: Fran Furjanic, Contracts Supervisor, on or before **12:00 noon, Monday September 22, 2008.** The Pennsylvania Turnpike Commission is located at 700 South Eisenhower Boulevard, Middletown, PA 17057 (Street address). Our mailing Address is P. O. Box 67676, Harrisburg, PA 17106.

Please note that use of U.S. Mail delivery does not guarantee delivery to this address by the abovelisted time for submission. PROPOSERs mailing proposals should allow sufficient delivery time to ensure timely receipt of their proposals. If the PTC office location to which proposals are to be delivered is closed on the proposal response date, due to inclement weather, natural disaster, or any other cause, the deadline for submission shall be automatically extended until the next PTC business day on which the office is open. Unless the PROPOSERs are otherwise notified by the PTC, the time for submission of proposals shall remain the same.

I-12. Proposals. To be considered, PROPOSERs must submit a complete response to this RFP, using the format provided in PART II. Seven (7) copies of each proposal must be included in the RFP submittal and all seven (7) copies shall be delivered to the Contracts Administration Department. No other distribution of proposals shall be made by the PROPOSER. Each proposal page must be numbered for ease of reference. Proposals must be signed by an officer authorized to bind the PROPOSER to its provisions and include the PROPOSER's Federal Identification Number. For this RFP, the proposal must remain valid for at least 90 days. Moreover, the contents of the proposal of the selected PROPOSER will become contractual obligations if a contract is entered into.

Each and every PROPOSER submitting a proposal specifically waives any right to withdraw or modify it, except as hereinafter provided. Proposals may be withdrawn by written or telefax notice received at the PTC's address for proposal delivery prior to the exact hour and date specified for proposal receipt. However, if the PROPOSER chooses to attempt to provide such written notice by telefax transmission, the PTC shall not be responsible or liable for errors in telefax transmission (note that receipt of the fax is not guaranteed even if the fax transmission appears to have been completed). A proposal may also be withdrawn in person by a PROPOSER or its authorized representative, provided its identity is made known and it signs a receipt for the proposal, but only if the withdrawal is made prior to the exact hour and date set for proposal receipt. A proposal may only be modified by the submission of a new sealed proposal or submission of a sealed modification which complies with the requirements of this RFP.

I-13. Economy of Preparation. Proposals should be prepared simply and economically, providing a straightforward, concise description of the PROPOSER's ability to meet the requirements of the RFP; the limit shall be 50 pages, with no smaller than 12 pt. font, $8\frac{1}{2} \times 11$ inch page size (larger pages are allowed for figures or tables, but they must be folded into the overall proposal and used sparingly).

I-14. Discussions for Clarification. PROPOSERs who submit proposals may be required to make an oral or written clarification of their proposals to the Issuing Office to ensure thorough mutual understanding and PROPOSER's responsiveness to the solicitation requirements. The Issuing Office will initiate all requests for clarification.

I-15. Best and Final Offers. The Issuing Office reserves the right to conduct discussions with PROPOSERs for the purpose of obtaining "best and final offers." To obtain best and final offers from PROPOSERs, the Issuing Office may do one or more of the following: a) enter into pre-selection negotiations; b) schedule oral presentations; and c) request revised proposals. The Issuing Office will limit any discussions to responsible PROPOSERs whose proposals the Issuing Office has determined to be reasonably eligible for award.

I-16. Prime PROPOSER Responsibilities. The selected PROPOSER is required to assume responsibility for all services offered in its proposal whether or not it produces them. Further, the PTC will consider the selected PROPOSER to be the sole point of contact with regard to contractual matters.

I-17. Proposal Contents. Proposals will be held in confidence and will not be revealed or discussed with competitors, unless disclosure is required to be made (i) under the provisions of any Commonwealth or United States statute or regulation; or (ii) by rule or order of any court of competent jurisdiction. If a contract is executed, however, the successful proposal submitted in response to this

RFP shall be subject to disclosure. All material submitted with the proposal becomes the property of the Pennsylvania Turnpike Commission and may be returned only at the Commission's option. Proposals submitted to the PTC may be reviewed and evaluated by any person other than competing PROPOSER at the discretion of the PTC. The PTC has the right to use any or all ideas presented in any proposal. Selection or rejection of the proposal does not affect this right.

I-18. Debriefing Conferences. PROPOSERs whose proposals are not selected will be notified of the name of the selected PROPOSERs and given the opportunity to be debriefed, at the PROPOSER's request. The Issuing Office will schedule the time and location of the debriefing. The PROPOSER will not be compared with other PROPOSERs, other than the position of its proposal in relation to all other proposals.

I-19. News Releases. News releases pertaining to this project shall not be made without prior PTC approval, and then only in coordination with the Issuing Office.

I-20. Commission Participation. Unless specifically noted in this section, PROPOSERs must provide all services to complete the identified work. The Issuing Office will provide the necessary workspace to accommodate up to two individuals for the duration of the initial deployment (for database entry, training, report generation, etc.) and for a period of two months after cutover to the new system.

I-21. Cost Submittal. The cost submittal shall be placed in a separately sealed envelope within the sealed proposal and kept separate from the technical submittal. Failure to meet this requirement may result in disqualification of the proposal.

I-22. Term of Contract. The term of the contract will commence on the Effective Date (as defined below). Installation, configuration, data entry, and training shall be completed within six (6) months of the effective date. A three year maintenance contract shall commence the day after the completion of the final system acceptance. The PTC shall fix the Effective Date after the contract has been fully executed between the Contractor and the PTC, and after all approvals required by PTC contracting procedures have been obtained.

I-23. PROPOSER's Representations and Authorizations. Each PROPOSER by submitting its proposal understands, represents, and acknowledges that:

- a. All information provided by, and representations made by, the PROPOSER in the proposal are material and important and will be relied upon by the Issuing Office in awarding the contract(s). Any misstatement, omission or misrepresentation shall be treated as fraudulent concealment from the Issuing Office of the true facts relating to the submission of this proposal. A misrepresentation shall be punishable under 18 Pa. C.S. 4904.
- b. The price(s) and amount of this proposal have been arrived at independently and without consultation, communication or agreement with any other PROPOSER or potential PROPOSER.
- c. Neither the price(s) nor the amount of the proposal, and neither the approximate price(s) nor the approximate amount of this proposal, have been disclosed to any other firm or person who is a PROPOSER or potential PROPOSER, and they will not be disclosed on or before the proposal submission deadline specified in the cover letter to this RFP.

- d. No attempt has been made or will be made to induce any firm or person to refrain from submitting a proposal on this contract, or to submit a proposal higher than this proposal, or to submit any intentionally high or noncompetitive proposal or other form of complementary proposal.
- e. The proposal is made in good faith and not pursuant to any agreement or discussion with, or inducement from, any firm or person to submit a complementary or other noncompetitive proposal.
- f. To the best knowledge of the person signing the proposal for the PROPOSER, the PROPOSER, its affiliates, subsidiaries, officers, directors, and employees are not currently under investigation by any governmental agency and have not, in the last four (4) years, been convicted or found liable for any act prohibited by State or Federal law in any jurisdiction, involving conspiracy or collusion with respect to bidding or proposing on any public contract, except as disclosed by the PROPOSER in its proposal.
- g. To the best of the knowledge of the person signing the proposal for the PROPOSER and except as otherwise disclosed by the PROPOSER in its proposal, the PROPOSER has no outstanding, delinquent obligations to the Commonwealth including, but not limited to, any state tax liability not being contested on appeal or other obligation of the PROPOSER that is owed to the Commonwealth.
- h. The PROPOSER is not currently under suspension or debarment by the Commonwealth, or any other state, or the federal government, and if the PROPOSER cannot certify, then it shall submit along with the proposal a written explanation of why such certification cannot be made.
- i. The PROPOSER has not, under separate contract with the Issuing Office, made any recommendations to the Issuing Office concerning the need for the services described in the proposal or the specifications for the services described in the proposal.
- j. Each PROPOSER, by submitting its proposal, authorizes all Commonwealth agencies to release to the PTC information related to liabilities to the Commonwealth including, but not limited to, taxes, unemployment compensation, and workers' compensation liabilities.

PART II

INFORMATION REQUIRED FROM PROPOSERS

Proposals must be submitted in the format, including heading descriptions, outlined below. To be considered, the proposal must respond to all requirements in this part of the RFP. Any other information thought to be relevant, but not applicable to the enumerated categories, should be provided as an appendix to the proposal. Each proposal shall consist of two (2) separately sealed submittals. The submittals are as follows: (i) Technical Submittal, in response to Sections II-1 through II-7 hereof; (ii) Cost Submittal, in response to Section II-8 hereof.

The PTC reserves the right to request additional information which, in the PTC's opinion, is necessary to assure that the PROPOSER's competence, number of qualified employees, business organization, and financial resources are adequate to perform according to the RFP.

The PTC may make such investigations as deemed necessary to determine the ability of the PROPOSER to perform the work, and the PROPOSER shall furnish to the Issuing Office all such information and data for this purpose as requested by the PTC. The PTC reserves the right to reject any proposal if the evidence submitted by, or investigation of, such PROPOSER fails to satisfy the PTC that such PROPOSER is properly qualified to carry out the obligations of the agreement and to complete the work specified.

II-1. Statement of the Problem. The PROPOSER shall provide text to verify complete understanding of the services required by this RFP.

II-2. Executive Summary. Include a narrative description of the team's technical approach and a list of the items to be delivered or services to be provided.

II-3. Work Plan. Describe, in narrative form, your technical plan for accomplishing the work. Use the task descriptions in Part IV of this RFP as your reference point. Modifications of the task descriptions are permitted; however, reasons for changes must be fully explained. Indicate the number of person-hours allocated to each task.

The Functional Requirements Document (FRD) referenced in Part IV depicts the envisioned system architecture and functional requirements for CADS. The CADS shall interface with the existing MIST and Vision 21 systems. The PTC requires the PROPOSER to utilize sound software development processes, including detailed examples of their processes applied to projects of similar scope.

II-4. Personnel. Include the number, and names where practical, of executive and professional personnel, analysts, auditors, researchers, programmers, consultants, etc., who will be engaged in the work. The proposal shall demonstrate the PROPOSERs ability to perform Task 2, described in Part IV. Show where these personnel will be physically located during the time they are engaged in the work. Include through a resume or similar document, educational background and experience in which each team member will be providing their expertise i.e. project management, database engineering, software engineering, etc. Indicate the responsibilities each will have in this project and how long each has been with your company.

Identify subcontractors you intend to use and the services they will perform.

Where subcontractors are named, include information regarding their role, personnel to be provided, and through resumes or similar documents, their educational background and experience. Indicate the responsibilities each will have in this project and how long each has been with the named subcontractor.

II-5. Past Performance. The PROPOSER must submit information on contracts/subcontracts performed over the past three years for organizations (commercial, state, local, Federal, etc.) involving similar or related services. The PROPOSER shall submit no more than 12 contract/subcontract descriptions for the entire proposed team (prime PROPOSER plus major subcontractors). The PROPOSER must submit this information on the most recently completed contracts/subcontracts or ongoing contract/subcontracts that are at least three months into the period of performance. The following information must be provided.

- Customer name and address.
- Technical office point(s) of contact (name and telephone number).
- Contracting/Business office point(s) of contact (name and telephone number).
- Contract name and number, if applicable.
- Date of contract award and period of performance.
- Type of contract.
- Total contract dollar value at time of award.
- Brief description of product or services.
- Brief description of the contract's relevance to the Task Areas of this project.
- Matrix of Past Performance and Experience. PROPOSER shall create a matrix relating past work performed by the proposed team (prime PROPOSER plus major subcontractors) to the Task Areas of this project.

Requirements Compliance – The PROPOSER must submit a Requirements Compliance Matrix to show their system's ability to meet the Commission's requirements. Attachment A contains the compliance matrix to be completed.

II-6. Training. The Vendor shall provide a minimum of six (6) training sessions for both the operators and administrators of the CADS upon acceptance of the system. A power point or web-based training program shall also be provided. The Vendor shall provide the PTC with a syllabus to be approved for each training session. The syllabi shall be submitted to the PTC at least 30 days prior to the System Acceptance Testing to allow the PTC adequate time for review.

II-7. M/W/DBE/ Participation. The PTC is committed to the inclusion of disadvantaged, minority, and woman owned firms in contracting opportunities. The minimum participation level for DBE/MBE/WBEs in this contract will be 10% total. Responding firms shall clearly identify DBE/MBE/WBE firms, expected to participate in this contract, in their Proposal. If the selected firm does not meet the preference for DBE/MBE/WBE participation, they will be required to demonstrate good faith efforts. Proposed DBE/MBE/WBE firms must be certified by the Pennsylvania Department of Transportation, Pennsylvania Department of General Services or the PA UCP at the time of the submission of the proposal. **If further information is desired concerning DBE/MBE/WBE participation**, direct inquiries to the Pennsylvania Turnpike Commission's Contract Administration Department by calling (717) 939-9551 Ext. 4241.

II-8. Cost Submittal. The information requested in this section shall constitute your cost submittal. The Cost Submittal shall be placed in a separate sealed envelope within the sealed proposal, separate from the technical submittal.

PROPOSER should **not** include any assumptions in their cost submittals. If the PROPOSER includes assumptions in its cost submittal, the Issuing Office may reject the proposal. PROPOSERs should direct in writing to the Issuing Office pursuant to Part I-9 of this RFP any questions about whether a cost or other component is included or applies. All PROPOSERs will then have the benefit of the Issuing Office's written answer so that all proposals are submitted on the same basis.

The total cost you are proposing must be broken down into the following components:

- **a. Direct Labor Costs.** Itemize to show the following for each category of personnel with a different rate per hour:
 - (1) Category: e.g., partner, project manager, analyst, senior auditor, research associate.
 - (2) Estimated hours.
 - (3) Rate per hour.
 - (4) Total cost for each category and for all direct labor costs.
- **b.** Labor Overhead. Specify what is included and rate used. If there is no labor overhead rate in your proposal, so state.
- **c. Travel and Subsistence.** Itemize transportation, lodging and meals per diem costs separately. Travel and subsistence costs must conform to the requirements of the most current version of the Commission's Travel Guidelines.
- **d. Consultant Costs.** Itemize as in (a) above. If there are no consultant costs in your proposal, so state.
- e. Subcontract Costs. Itemize as in (a) above. If there are no subcontract costs in your proposal, so state.
- **f. Cost of Supplies and Materials.** Itemize. If there are no supplies and materials in your proposal, so state.
- g. Other Direct Costs. Itemize. If there are no other direct costs in your proposal, so state.
- **h.** General Overhead Costs. Specify what is included and rate used. If there are no general overhead costs in your proposal, so state.
- i. Total Cost.

Any costs not provided in the cost proposal will be assumed as no charge to the Commission.

The PROPOSER shall be responsible for all incidentals necessary to make the CADS and all of its elements complete and ready for operation, even if not particularly specified. Such incidentals shall be furnished, delivered, and installed by the PROPOSER without additional compensation or expense to the PTC. Minor details not usually shown or specified, but necessary for the proper installation and operation of the CADS shall be included in the work in the PROPOSER 's bid price, the same as if herein specified. By the submittal of a bid, it is understood and agreed by the PROPOSER that the system description provided herein is complete and includes all equipment necessary for the proper functioning of the CADS except for the specific equipment which will be provided by the PTC as noted in the requirements document.

The selected PROPOSER shall only perform work on this contract after the Effective Date is affixed and the fully-executed contract sent to the selected PROPOSER. The PTC shall issue a written Notice to Proceed to the selected PROPOSER authorizing the work to begin on a date which is on or after the Effective Date. The selected PROPOSER shall not start the performance of any work prior to the date set forth in the Notice of Proceed and the PTC shall not be liable to pay the selected PROPOSER for any service or work performed or expenses incurred before the date set forth in the Notice to Proceed. No PTC employee has the authority to verbally direct the commencement of any work under this Contract.

PART III

CRITERIA FOR SELECTION

III-1. Mandatory Responsiveness Requirements. To be eligible for selection, a proposal must be (a) timely received from a PROPOSER; (b) properly signed by the PROPOSER; and (c) formatted such that all cost data is kept separate from and not included in the Technical Submittal.

III-2. Proposals will be reviewed and evaluated by a committee of qualified personnel selected by the PTC. This committee will recommend for selection the proposal that most closely meets the requirements of the RFP and satisfies PTC's needs. Award will only be made to a PROPOSER determined to be responsive and responsible in accordance with Commonwealth Procurement Code.

III-3. The following criteria will be used, in evaluating each proposal:

- **a. Functional Requirements Compliance Matrix.** The reviewers will assess the compliance of the PROPOSER's response the requirements contained in the RFP.
- **b. Understanding the Problem.** This refers to the PROPOSER's understanding of the PTC's needs and objectives that generated the RFP. It also includes understanding the nature and scope of the work involved.
- **c. Soundness of Approach.** Emphasis here is on the techniques for collecting and analyzing data, sequence and relationships of major steps, and methods for managing the service/project. Of equal importance is whether the technical approach is completely responsive to all written specifications and requirements contained in the RFP and if it appears to meet Commission objectives.
- **d. PROPOSER Qualifications.** This refers to the ability of the PROPOSER to meet the terms of the RFP, especially the time constraint and the quality, relevancy, and recency of studies and projects completed by the PROPOSER. This also includes the PROPOSER's financial ability to undertake a project of this size.
- e. **Personnel Qualifications.** This refers to the competence of professional personnel who would be assigned to the job by the PROPOSER. Qualifications of professional personnel will be measured by experience and education, with particular reference to experience on studies/services similar to that described in the RFP. Particular emphasis is placed on the qualifications of the project manager.
- **f.** Available Facilities. Provide information (e.g. location, work force on location, etc.) on the facilities that shall be used in the completion of this contract.
- **g. Cost.** While this area may be weighted heavily, it will not normally be the deciding factor in the selection process. The PTC reserves the right to select a proposal based upon all the factors listed above, and will not necessarily choose the firm offering the best price. The PTC will select the firm with the proposal that best meets its needs, at the sole discretion of the PTC.

PART IV

WORK STATEMENT

IV-1. Objectives.

The existing PTC CADS was installed in 1999 and was upgraded in 2006 to a new software version. The CADS is currently being used for data entry to track incidents. The CADS interfaces with the existing MIST system (Management Information System for Transportation) - the PTC's Advanced Transportation System ATMS), with MIST receiving incident management data from the CADS, and with Vision 21 (the call box system). The CADS, however, suffers from limited scalability, and does not permit the real time listing of appropriate incident responders based on the type of incident, location and availability of the nearest responder. To rectify these shortcomings, the PTC will enter into a contract with a qualified technical firm for system development, procurement, installation, integration, implementation, testing, operations and maintenance of a new CADS, which will replace the existing CADS.

IV-2. Nature and Scope of the Project. The Pennsylvania Turnpike is a key transportation route within the Commonwealth of Pennsylvania and a vital link in the roadway network of the eastern United States. The Turnpike is 512 miles in length with 55 fare collection facilities, twenty-two (22) service plazas and two (2) traveler information centers, twenty (20) maintenance facilities, eight (8) State Police Barracks and five (5) tunnels. The proposed CADS system shall cater to the existing Turnpike extents and shall have the capacity to include future expansion.

IV-3. Tasks.

Task 1 - System Design Document (SDD).

The requirements are defined in the attached Functional Requirements Document (FRD). The purpose of the SDD is to show how the system is structured to satisfy the FRD requirements. The SDD represents a blueprint for the implementation activity. Each FRD requirement shall be traceable, through the use of verification matrix identified in the FRD, to one or more design entries. In addition, the method of verification shall be identified for each requirement. The SDD shall be submitted to the PTC at least three (3) weeks prior to the scheduled Critical Design Review (CDR). The SDD shall be updated as the design develops throughout the tasks.

Task 2 - Acceptance Test Plan and Procedures (ATP).

The Acceptance Test Plan (ATP) shall be used to acknowledge and document a final and properly working system. The ATP shall be based on the verification methods identified in the SDD and in accordance of Chapter 5 of the FRD: Testing Requirements. Passage of the ATP shall constitute final acceptance of the CADS by the Commission. The Vendor shall submit the ATP at least three weeks prior to the CDR.

The ATP shall be updated on a regular basis to remain consistent with the SDD.

Note that the ATP shall include a period of at least 30 days of fault free operation after all of the required functionality has been verified. During this fault free operation, the CADS must continuously provide the required functionality without the need to re-start processes, re-boot the system, or otherwise stop and restart the system. The system support shall start after the completion of the 30 day fault free operation.

Task 3 - Development and Testing of the PTC-CADS.

The purpose of this task is to develop, install and fully integrate all required system components. At the completion of this task, the PTC-CADS will have passed the acceptance test and the system shall be fully ready to go on-line.

All work performed in this Task will be completed in accordance with the system design developed in Task 1. The CADS shall operate on the Commission provided equipment identified in the FRD.

Task 4 - Documentation.

The Vendor shall provide the following documentation in hard and soft (PDF on CD) copy format.

Review copies of the manuals shall be delivered at least thirty (30) days prior to the Acceptance Test. Comments received from the Commission shall be incorporated into the final version which shall be delivered within thirtydays after receipt of the comments. Note that the thirty (30) day fault free operation portion of the Acceptance Test cannot be completed if the documentation outlined herein has not been completed and supplied to the PTC.

• Operations Manual.

The operations manual shall provide a detailed description of normal system operation including system startup and shut down procedures, entering of data, and error and alarm handling procedures. Thirty (30) hard and two (2) soft copies shall be provided.

A separate "System Administration Operations Manual" shall be provided. This manual shall include detailed information on system administrator functions such as password administration, setting access levels and installing, backing up and restoring the CADS software. Two (2) hard and two (2) soft copies shall be provided.

• Additional Documentation

Additional required documentation is specified in the Chapter 6 of the FRD: Documentation.

• Documentation Reviews.

Unless otherwise specified, all reviews will be conducted at the PTC's facilities on mutually agreeable dates. The Commission reserves the right to schedule additional review meetings, and site visits after short-listing.

Task 5 - Operations and Maintenance Support.

• Training.

The Vendor shall provide training sessions for the operators and administrators of the PTC-CADS upon acceptance of the system and based on the manuals prepared as part of Task 4. The Vendor shall also provide additional training sessions to train a particular group of operators and administrators that shall be responsible to train future employees on the system. Refer to II-6 of this document for further details.

• Ongoing Software and Hardware Maintenance Support.

The Vendor shall be required to determine the cause of all software problems within the PTC-CADS. The Vendor shall be responsible for maintaining any custom software developed or provided for the PTC-CADS. The Vendor shall assist in the maintenance and upgrade of third-party software elements essential to the operation of the PTC-CADS. The Vendor shall be responsible for a 6 hour call to repair time frame. The vendor shall respond to all problems within 6 hours.

The Vendor shall support operation and maintenance through a series of Problem Reports, Change Requests, and Test Reports. The Problem Report documents an identified problem or bug identified by the operator, administrator, or Vendor. The corresponding Change Request documents the change necessary to correct the problem. The Test Report documents the results achieved by implementing the Change Request. The PTC must approve all Change Requests before being implemented. The Vendor shall conduct regular Technical

Interchange Meetings (TIMS) to review the status of Problem Reports, Change Requests, and Test Reports over the following rollout period: weekly meetings during the first three (3) months of operation, monthly meetings during the second three (3) months, and bi-monthly meetings during the following six (6) months.

• Software and Hardware Upgrades.

The Vendor or the PTC may request upgrades to the system COTS software when full support versions, patches or service packs are released. Upgrades are documented in a Change Requests as described in previous section and are tracked in a common database.

The upgrade Change Requests shall be reviewed with the Commission for approval and to set installation dates.

The manuals described in Task 4 shall be updated to reflect the upgrades.

IV-4. Reports and Project Control.

a. Task Plan. A work plan for each task that identifies the work elements of each task, the resources assigned to the task, and the time allotted to each element and the deliverable items to be produced. This shall be updated on a monthly basis.

b. Status Report. A bi-weekly progress report covering activities, problems, and recommendations; the report shall be keyed to the work plan developed by the PROPOSER in its proposal, as amended or approved by the PTC. Status Reports shall be submitted through the completion of system acceptance and the 30 day fault-free operation.

c. Problem Identification Report. An "as required" report, identifying problem areas. The report should describe the problem and its impact on the overall project and on each affected task. It should list possible courses of action with advantages and disadvantages of each, and include PROPOSER recommendations with supporting rationale.

d. Final Report. The Final Report shall be submitted to the PTC within one (1) month after system acceptance.

- **1.** Summarize the result of the project in terminology that will be meaningful to management and others generally familiar with the subject areas.
- 2. Summarize findings, conclusions, and problems that occurred in the development of each task.
- **3.** Include all supporting documentation; e.g., flow charts, forms, questionnaires, etc.

Functional Requirements Document For the Pennsylvania Turnpike Commission Computer Aided Dispatch System

Project No.

RFP 08-10350-3631

Prepared for:

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1. INTRODUCTION

1.1 Purpose of Document

The Pennsylvania Turnpike Commission (PTC) is replacing its Computer Aided Dispatch System (CADS) used by the Transportation Operations Center (TOC) staff to track incident responses on the Pennsylvania Turnpike (referred to as the PennPike). The existing system is a product of Orbacom and has been in service since 1999. Based on operational experience with the existing system and future needs, the PTC has identified additional CADS requirements that will improve the management of resources and improve system maintenance operations.

The purpose of this document is to provide a CADS Proposer with the PTC's specific functional, interface, and enabling requirements for the procurement of a new CADS. This document will become a component of the PTC's bid documents for the competitive procurement of the new CADS. The document is the product of a Work Order between the PTC and TransCore to develop the procurement documents for the new CADS.

1.2 Scope

This document specifies the desired functionality of a new CADS for the PTC; it was developed through a review and inventory of the existing CADS (including existing CADS functionality), PTC management and personnel interviews, and information compiled through research of other CADS being used in other locations that demonstrate similar functional needs to those of the PTC.

1-1



2. SYSTEM DESCRIPTION

2.1 Operator Positions

The PTC's existing CADS is used as an incident tracking and management system and is utilized primarily by three types of TOC positions and one type of non-TOC position; their position and duties are outlined below:

- **TOC Duty Officer:** A Duty Officer's primary responsibility is to activate and deactivate ITS devices and to disseminate information to the public and stakeholder organizations both internal and external to the PTC. These actions are taken primarily through MIST (Management Information System for Transportation) which receives incident information from CADS. In addition, a Duty Officer enters or modifies information in CADS; this information typically includes time stamped incident comments and ITS device activation notes.
- **TOC Radio Operator**: A Radio Operator's primary responsibility is to receive incident reports via telephone, call box, radio, and cellular *11 calls. The CADS is designed to provide the Radio Operators with instant access to contact information for the closest emergency services and PSP unit for incidents along the PennPike. Each call is added to the CADS for tracking and management. The Radio Operator uses the resource contact information provided by CADS to dispatch appropriate responders for each incident.
- **Pennsylvania State Police (PSP)** at the TOC: A PSP Corporal is on site to provide assistance to Duty Officers and Radio Operators in the instance of a fatality or criminally related incidents. The PSP's only direct use of CADS is PIP (Post Incident Processing). The PSP uses different incident classifications than the PTC; The PIP enables the PSP to fill in the PSP incident classification field so they can track PTC incidents for their own internal reporting.
- *Network Control:* The Network Control operators are responsible for monitoring the PTC's information systems which includes field ITS and communications equipment. Network Control uses the CADS to track and manage all field repairs and replacements that have been reported.

2.2 Existing CADS Interfaces

The existing CADS interfaces with two other PTC systems: MIST and the Vision 21 call box system (Vision 21). The interface with MIST is a one way information flow from the CADS to MIST. MIST receives incident data from the CADS and displays this information on both the MIST system map and the PTC's web-map located on the PTC's webpage. The following flow diagram (Figure 2-1) shows the typical operational use of the CADS.

Note that the CADS full dispatching functionality is not currently being utilized. The CADS is being used only for data entry to track incidents. This is because the current CADS does not effectively provide a real time listing of appropriate incident responders based on the type of incident, location, and availability of nearest responder. All of the information provided by the CADS is based on the user's input.

In addition, there is a limitation on the CADS such that only one user can access an incident record at any time which is unacceptable. The new CADS shall not require such a restriction.

The new CADS shall also have the ability to utilize GPS technologies (for both incident reporting and resource monitoring), communicate with the PSP Mobile Data Terminals (MDT), and archive information for performance review.





Figure 2-1: Existing PTC CADS Flow Diagram



3. REQUIREMENTS

This section identifies the PTC's CADS requirements in the following categories:

- Functional Requirements
- Interface Requirements

3.1 Functional Requirements

This section identifies the PTC's CADS requirements in the following functional categories:

- General
- System Requirements
- Identifying, classifying, and assigning incidents
- Dispatching incidents
- Tracking incident status
- Map
- Operational Support Tools

3.1.1 General CADS Requirements

These requirements shall apply to all of the CADS functions.

- 1. The CADS shall provide two main functions: a) Incident Management Dispatch and b) Network Infrastructure Management
 - a. Incident Management Dispatch and Network Infrastructure Management share some common functions, but the specific functions for each shall be provided based on the operator login, i.e., an operator logged in as a *Incident Dispatcher* shall have access to *Incident Dispatcher* functions and a user logged as a *Network Manager* will have access to *Network Management* functions.

Note that the responsibilities of these two types of operators are similar to the existing operation. **Network** refers to the ITS device and Communications infrastructure which includes central systems, network components, ITS field devices, and all related maintenance, inventory management, and dispatching activities for the operation and maintenance of the infrastructure. The **Incident** management functions, on the other hand, which includes dispatch, incident tracking, etc. are all related to traffic events or other events which directly affect traffic. Both types of positions are considered **dispatchers** because they "dispatch" resources to support their respective responsibilities.

- 2. The responsibilities of the dispatchers covers one or more districts.
 - a. Dispatchers shall log into one or more districts for which they are assigned responsibility.
 - b. Dispatchers shall have the ability to change their districts after login.



- c. The number of districts is currently five (5) but shall be expandable by the Commission System Administrator to fifty (50) districts.
- d. This increase shall only require a database configuration change; the CADS shall have the capacity for this expansion without further software, licenses, or hardware.
- e. This increase shall not degrade the required system performance such as processing and query speed.
- f. The CADS shall have the ability to be configured such that dispatchers can only log-in onto the districts that are assigned to them and restrict them to access other districts if so desired by the PTC. This functionality shall just require a configuration change on the CADS' security settings by the System Administrator. The CADS default setting shall provide all dispatchers access to all the districts.
- 3. The CADS shall allow multiple users to access and update the same incident, without interfering with each other's entries. The system shall include the appropriate safeguards and operator interactions such that data is not lost or corrupted when the same incident is being accessed and updated by multiple operators.
- 4. The CADS shall allow operators to combine calls, when it is determined that the calls are for the same incident. When calls are combined, all information from the combined calls shall be retained.
- 5. For entries made in narrative fields, the CADS shall automatically notate the entry with date and time stamp of the entry along with the identification of the operator making the entry. The identification for each operator shall be unique and shall be assigned by the System Administrator. The identification shall be alphanumeric without limit to the number of characters and combination. An initial list of operator identification shall be provided to the Proposer.
- 6. For screen "windows" which display information in rows and columns, the CADS shall provide the capability to sort on each column or row, by increasing or decreasing alphanumeric values. The CADS shall support the selection of both increasing and decreasing alphanumeric values.
- 7. For screen windows which display information in rows and columns, the CADS shall provide the capability to search by type or category where appropriate.
- 8. The CADS shall provide for instant messaging between the CADS workstations.
 - a. The instant messaging shall enable operators to send broadcast messages to a group of workstations. All messages shall be saved by the system to a period defined by the System Administrator. The CADS' default setting shall be thirty calendar days.
 - b. The instant messaging shall allow an operator to send a message to a specific workstation or to multiple identified workstations.
- 9. The CADS internal time-of-day clock shall automatically synchronize to the PTC's computer Local Area Network (LAN) time source.
 - a. Automatic synchronization shall be such that the CADS clock shall never deviate from the PTC's computer network time source by more than 2 seconds.

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- 10. The CADS shall provide a Web based user interface for viewing and requesting reports.
 - a. The Web based interface shall fully support the use of Microsoft Internet Explorer for all functions.
- 11. The CADS shall provide view only capability that shall be accessed from a web browser.
 - a. The view only capability shall provide the ability to:
 - i. view incident details
 - ii. research historical events
 - iii. run reports
 - b. The CADS shall allow a properly authorized operator to configure what entries in the incident record are allowed in the view only interface.
 - c. The web view only interface shall not allow the user to make any changes to the data.
 - d. The web based view only interface shall fully support the use of Microsoft Internet Explorer for all functions.
 - e. Use of the web based view only interface shall require the user to login and provide a password
 - f. Login names and passwords shall be established and maintained by the System Administrator.
- 12. The CADS shall use Microsoft SQL Server as the database software. No other database software shall be allowed.
- 13. The CADS shall be able to provide a report showing all users currently logged onto the system including all web interfaces.
- 14. The CADS shall automatically login to the CLEAN database when an operator with the proper security level is logged onto the CADS. This automatic login shall be configured by the System Administrator.
- 15. All user data/transaction including but not limited to data entries, actions, log-in activities, instant messaging transmission, system configuration changes, system updates shall be archived by CADS for a period defined by the System Administrator. The CADS' default setting shall be 30 calendar days.

3.1.2 System Requirements

3.1.2.1 Client-Server Based

 The CADS client software shall run on existing PTC owned Dell Precision 380 workstations with 3.2 gigahertz Pentium 4 processors, 1 GB RAM, USB Keyboards and mice, with Colorgraphic Xentera GT quad display adapters (capable of supporting up to 4 displays – currently supporting 3 flat panel displays).



- 2. The CADS server based software shall run on existing PTC owned HP ProLiant DL380 G4 servers with dual 3.60 gigahertz Intel Xeon processors, 4 GB RAM, with 36.41 GB mirrored drives.
- 3. PTC owned keyboard/video/mouse devices are available at both Harrisburg and King of Prussia as well as the Eastern Regional Office (ERO) server locations and may be used to support the user interfaces to the existing PTC equipment. The Proposer shall identify if new keyboard/video/moue devices shall be provided.
- 4. A PTC owned database backup server will be available for the primary CADS server.
- 5. The PTC owned network shall be the transport within the primary CADS server facility. Multiple field locations, including the back-up server location, are shown in Figure 3-1.
- 6. The CADS shall implement server mirroring and automatic switching in the event of failure of the primary server.
- 7. The CADS shall ensure that transaction replication is used between the databases on the two CADS servers.
- 8. The CADS shall include an automated procedure for replication restoration in the event of failure.
 - a. No operator (human) intervention shall be required at the servers to accomplish switching between servers in the event of a failure.
 - b. Data and queued calls shall not be lost and shall be available following the reboot if required.
 - c. Active calls which are open in the active call window may be interrupted but shall be fully retrievable.
- 9. In addition to the dispatch workstations and records management workstations, the Proposer shall provide and install administrative software packages on forty-five (45) PTC owned workstations. The CADS supplier shall provide software licenses sufficient for the complete deployment of thse 45 workstations. The exact number of workstations and software to be installed on each workstation is shown in the inventory table.
 - a. Most of these work stations shall require the ability to view (only) active calls.
 - b. A quantity of these, not to exceed fifteen (15), shall also require the functionality to view only the "*Network Management*" user group's active calls and databases. These shall be connected via the Commission's network at the primary and remote facilities.
 - c. In the future, the PTC intends to install CADS administrative software on additional workstations. The CADS supplier as part of his price bid shall include as an option to PTC, cost of additional CADS administrative licenses in bundle of 25 licenses.
- 10. The CADS supplier shall ensure that the installation of the CADS clients, servers, and browser based applications does not interfere with the existing non CADS software also installed on these machines.
- 11. It is the CADS supplier's responsibility to ensure compatibility between the CADS software and the existing workstations and servers.



Note: where the PTC is supplying the servers and workstations as outlined above, if the CADS supplier feels that this equipment is inadequate for their system, then the CADS supplier shall identify to the PTC all necessary upgrades and additional hardware and COTS software products necessary to upgrade and/or replace the existing systems. The PTC will be responsible for the upgrades or replacements. It will be PTC's responsibility to install the upgrades and/or replacement equipment, and ensure that all existing software (except the existing CADS) which is being used on these systems is fully operational; this includes any and all Microsoft applications, MIST applications, etc. without exception

3.1.2.2 Required Operating Systems

- 1. The following operating systems shall be used:
 - a. Servers: Windows 2003 server.
 - b. Workstations: Windows XP Service Pack 2.

3.1.2.3 Security Levels

- 2. The system shall provide a minimum of five (5) access levels. The system shall allow the System Administrator to fully define, configure and modify parameters for all access levels.
 - a. The levels shall be assigned according to the user ID and password.
 - b. Each level shall have specific CADS functions available to it. The five (5) identified access levels are:
 - i. System Administrator shall be able to use all CADS functions and in addition can update database definitions and tables. The System Administrator shall have full capability to define, configure, manage and modify all system settings and parameters.
 - ii. Dispatcher shall be able to use all CADS functions and are cleared for NCIC and CLEAN access.
 - 1. Each dispatcher logs into CADS and selects their geographic specific districts and the user shall have the ability to re-select/change their districts after login.
 - iii. Network Management Group shall be able to access all Network Control Group functions and incidents but are not authorized for NCIC and CLEAN access.
 - 1. Network Control users are responsible for all turnpike network incidents as the work is not divided into districts.
 - iv. Post Incident Process shall be able to view and generate reports, in addition can add code to existing PSP incident only field.
 - v. View Only shall be able to only view and generate reports via web interface. Change of any data shall not be permitted.
- 3. The CADS shall recognize which dispatcher (2.b.ii above) is logged into each district and distribute incidents to the correct dispatcher based on the district the dispatcher is logged- in and the district in which the incident occurs.





Figure 3-1: Existing Network Block Diagram



3.1.3 Identifying, Classifying and Assigning Incidents

The following sections describe the intended scenarios that shall be supported by the new CADS. The CADS shall support these scenarios and the operator interactions necessary to provide the functionality described herein.

Incidents are classified into two major categories:

- *Incident Dispatch*: The incident dispatch operation begins by receiving incident information, classifying the incident and assigning the incident to responders. *Incident Dispatch* operators obtain incident information from various sources, e.g., *11, VHF radio, call boxes, PennPike motorists, external agencies, and PTC personnel. Call takers deal only with *11 calls and pass the incident on to the dispatcher working the district where the incident occurred. Call takers also input incident information to CADS.
- *Network Management:* The Network Management operation begins in much the same way, with information coming from radio and telephone calls. The *Network Management* operators enter the information on a call screen and identify the incident type and location. The need for metrics for the Network Management shall be to recall call totals and totals by incident type. The Network Management user "works" the calls to completion. Competing Network Management incidents sometimes takes days. The CADS need to support these Network Management activities.
- 3.1.3.1 Incident Identification Data Fields
 - 1. Data Entry
 - a. The CADS shall provide the capability for the user to type information directly into the screen fields or in specified instances where drop down selections lists are appropriate, provide menus to enable the operator to select an entry from a list.
 - b. The CADS shall provide drop down menus in any field where use of such function is appropriate. i.e. incident type.
 - c. When a drop down selection list is provided, the user shall be able type keys which shall "jump" the pointer to the entry with that character as the first character in the selection list; if subsequent characters are typed, the CADS shall further refine the entry to match the characters as typed in sequence. However, if the operator pauses longer than a configurable period of time, then the CADS shall accept the next key entry as the first character for an entry in the drop down list. If there is no entry which matches the characters typed, then the list shall show the last entry which matched a key stroke. Thus, typing a 'G' would cause the "pointer in the selection list" to immediately jump to the first entry starting with a 'G'; typing an 'O' quickly after typing the 'G' would select the first entry matching 'GO' and so-forth. However, if the operator were to pause between the 'G' and the 'O', then the system would "jump" to the first entry starting with and 'O'. This technique is intended to allow the operator to quickly select items from a long list where the entries may be well known.
 - 2. Caller Information
 - a. To begin the call information entry process, the CADS operators shall be provided the option to select an icon or to use a single hotkey stroke to call up a caller information entry screen to initiate a new call entry. Both options (Icon and hot key) shall be provided.



- b. The operator shall be able to move from each entry box to the next by using the TAB key.
- c. Figure 3-2 is an example of a call information entry screen. The CADS Proposer shall provide a call information screen with equivalent or better capabilities in relation to the current system screen (Figure 3-2).
- d. The CADS shall provide the ability to enter text into fields to identify the caller as shown below:
 - i. First Name
 - ii. Last Name (and suffix such as Jr, III)
 - iii. Salutation (e.g., Mr., Ms., Mrs.)
 - iv. Address (including 2 lines for the street address and appt.#, city, state, zip-code)
 - v. Phone Number (and phone type)
 - vi. Alternate phone Number and type
 - vii. Date of Birth
- 3. Incident Information
 - a. The CADS shall provide the ability to enter text into fields identifying the incident locations; these fields shall include the following as a minimum:
 - i. Address
 - ii. Location / milepost (auto populated when dispatcher locates incident)
 - iii. Cross Streets
 - iv. Lane the PTC shall provide the lane assignment to the CADS Proposer
 - v. Latitude/Longitude

The system shall automatically populate the Latitude/Longitude field when the entry of a milepost is complete and vise versa (i.e. if the Lat/Lon is entered – it shall populate the location/milepost field.

- b. Incident type shall be assignable by drop down menu. The existing incident types are listed in Appendix A.
 - i. It shall be possible for the System Administrator to modify (add and/or delete) the drop down menus for incident type.
- c. The incident location "location field" entry shall consist of:

a letter / a milepost number / a letter as follows:

i. The first letter is to identify turnpike roadways. The number of roadways (hence letters) shall be expandable to 26. The capability shall be provided for the System Administrator to define and add, additional letters. The currently defined first letters are defined below:



- T Any incident on the Mainline
- A Any incident of the Northeast Extension
- B Any incident on the Beaver Valley Expressway
- G Any incident on the Amos K. Hutchinson Bypass
- M Any incident on the Mon-Fayette Expressway
- S-Southern Beltway
- ii. The milepost number shall be the nearest milepost on the road where the incident occurred.
- iii. The second letter shall be as defined below:
 - N North
 - S-South
 - E East
 - W-West

incident Type	Pri	Origination Type	Previous Call Information	Assigned Units
Accident w/o inj.	2		Call Box - Multiple Buttons	Unit Status
End Disposition			Call Box - Service 10/13/2	8163 DS
Reporting Party			Call Box - Service 09/19/2 Call Box - Multiple Buttops	8162 ER
FirstName	Lastla	ime	- Call Box -	DG101 EP
Meg				
Pre HouseNumber Suff	ix Phone 717-55	Number 5-1212		<u>.</u>
Pre Dir Location	100000	Suffix PostDir		
Municipality	State	DOB	Comments	
Municipality	State PA	DOB 01/01/9999	2 Vehicles	2
Municipality	State PA	DOB 01/01/9999	2 Vehicles Vehicle will need towed. Strue	ck debris.
Municipality Incident Location Pre Housellumber Lan	State PA e ESN	DOB 01/01/9999	Comments 2 Vehicles Vehicle will need towed. Strue	ck debris.
Municipality Incident Location Pre HouseNumber Lan	State PA e ESII 646	DOB 01./01./9999 Zone FBox EMS 7 646 0	Comments 2 Vehicles Vehicle will need towed. Strue 1/1/2008 22:32:24 DG 107 AD EL OCKING LEET LANE	ck debris. VISING 1 VEHICLE IS
Municipality Incident Location Pre HouseNumber Lan Pre Dir Location	State PA e ESII 646	DOB 01/01/9999 Zone FBox EMS 7 646 0 Suffix PostDir	Comments 2 Vehicles Vehicle will need towed. Strue 1/1/2008 22:32:24 DG 107 AD BLOCKING LEFT LANE	ck debris. VISING 1 VEHICLE IS
Municipality Incident Location Pre HouseNumber Lan Pre Dir Location T96.1E	State PA e ESN 646	DOB 01/01/9999 Zone FBox EMS 7 646 0 Suffix PostDir	Comments 2 Vehicles Vehicle will need towed. Strue 1/1/2008 22:32:24 DG 107 AD BLOCKING LEFT LANE 1/1/2008 22:37:25 VAN IS NO	ck debris. VISING 1 VEHICLE IS W OFF THE ROAD, NO
Municipality Incident Location Pre HouseNumber Lan Pre Dir Location T96.1E Community	e ESII 646 State	DOB 01/01/9999 Zone FBox EMS 7 646 0 Suffix PostDir	Comments 2 Vehicles Vehicle will need towed. Strue 1/1/2008 22:32:24 DG 107 AD BLOCKING LEFT LANE 1/1/2008 22:37:25 VAN IS NO' BACKLOG, BOTH PASSENGER	CK debris. VISING 1 VEHICLE IS W OFF THE ROAD, NO R VEHICLES HAVE 2 FLAT
Municipality Incident Location Pre HouseNumber Lan Pre Dir Location T96.1E Community Blk VW Jetta / Off Rd / No In	State PA e ESH 646 State ij / PA	DOB 01./01./9999 Zone FBox EMS 7 646 0 Suffix PostDir	Comments 2 Vehicles Vehicle will need towed. Strue 1/1/2008 22:32:24 DG 107 AD BLOCKING LEFT LANE 1/1/2008 22:37:25 VAN IS NO' BACKLOG. BOTH PASSENGEF TIRES, AND NO INJURIESDG	ck debris. VISING 1 VEHICLE IS W OFF THE ROAD, NO R VEHICLES HAVE 2 FLAT 100
Municipality Incident Location Pre Housellumber Lan Pre Dir Location T96.1E Community Blk VW Jetta / Off Rd / No In Cross Streets	State PA e ESH 646 State j / PA	DOB 01./01./9999 Zone FBox EMS 7 646 0 Suffix PostDir	Comments 2 Vehicles Vehicle will need towed. Strue 1/1/2008 22:32:24 DG 107 AD BLOCKING LEFT LANE 1/1/2008 22:37:25 VAN IS NO BACKLOG. BOTH PASSENGER TIRES, AND NO INJURIESDG	CK debris. VVISING 1 VEHICLE IS VV OFF THE ROAD, NO R VEHICLES HAVE 2 FLAT 100
Municipality Incident Location Pre HouseNumber Lan Pre Dir Location T96.1E Community Blk VW Jetta / Off Rd / No In Cross Streets X Coordinate	State PA e ESII 646 State j / PA Y Coor	DOB 01/01/9999 Zone FBox 7 646 0 Suffix PostDir	Comments 2 Vehicles Vehicle will need towed. Strue 1/1/2008 22:32:24 DG 107 AD BLOCKING LEFT LANE 1/1/2008 22:37:25 VAN IS NO' BACKLOG. BOTH PASSENGER TIRES, AND NO INJURIESDG	ck debris. VISING 1 VEHICLE IS W OFF THE ROAD, NO R VEHICLES HAVE 2 FLAT 100

Figure 3-2: Example of Current Call Information Screen for Information Only



- 3.1.3.2 Additional CADS Incident Management Functionality
 - 1. The system shall allow separate tracking, reporting and access based upon user ID for at least sixteen (16) different user groups.
 - a. The existing CADS has 31 incident types for the Dispatcher user group and 26 incident types for the Network Control user group. The new CADS shall have a minimum of 124 editable incident types and shall be assignable to one or more user groups. The CADS shall provide the System Administrator the ability to add and/or delete incident types.
 - 2. The CADS shall provide an incident type drop down list.
 - a. The CADS shall provide a list of all dispatch incident types to dispatchers and a list of all Network Control incidents to Network Control users.
 - b. Clicking on the desired incident type shall enter it into the incident type field on the call screen.
 - 3. The CADS shall provide the ability to change the incident type.
 - 4. A record of all incident types assigned to a given incident shall be maintained. The normal application of this feature is when a responder arrives at the incident and determines that the incident is of a different type than previously selected.
 - 5. The CADS shall provide a common place feature for the incident location.
 - a. The common place menu shall provide an entry window to type the location desired.
 - b. A drop down menu shall be provided containing the locations matching the text entered into the entry window.
 - c. The operator shall be able to select the desired name from the common place menu by double clicking the entry.
 - d. The common place feature shall enter the incident location field in the active call box.
 - 6. The CADS shall provide the capability to combine duplicate incidents . In the case where more than one call comes in for the same incident, when it is recognized the incidents can be combined, the CADS shall allow the combining of the information retaining all differing information from the different call ins.
 - 7. When all pertinent data has been entered, the user shall have the ability to press a hotkey or icon (both shall be supported) to release the call to the queue.
 - a. When the dispatcher/call taker has moved the incident into the incident queue, the incident shall be passed to the dispatcher working the district where the incident occurred (for dispatchers).
 - b. Network Control users work the incident without passing to another user.
 - 8. Placing the incident in the incident queue shall be accomplished by the dispatcher selecting an icon on the screen or by using a hotkey (both shall be supported).
 - a. When the incident is placed in the queue, the CADS shall automatically initialize a timer, based on incident type, that provides a visual alert and an audible alert when an acceptable time to dispatch the incident has expired.

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- b. The CADS shall provide the ability for the operator to override the timer.
- c. The time-out for the timers shall be adjustable by the System Administrator (for dispatchers).
- d. Network Control does not require timers.
- 9. It is possible the dispatcher taking the call will be the dispatcher to work the call. In this case the CAD system shall enable the dispatcher to continue working the incident with no interruption. This shall always be the case for Network Control users.
- 10. When the incident field has been populated, the CADS shall display the nearest access gate/s with mile marker on both sides of the incident.
- 11. The CAD shall provide a comments field.
 - a. Operators shall be able to enter text messages about the incident in the comment field.
 - b. Entries in the comment field shall automatically be appended with the date / time and the operator identification that entered the comment.
- 12. The incident priority is set by the system based on incident type. The CADS shall provide the capability for the System Administrator to update the incident priorities to include adding new priorities and modifying the mapping between incidents and priorities. The existing priorities are 0, 1, 2, and 3. The incident priorities can be edited by the System Administrator.
- 13. End Disposition shall be updateable by the System Administrator. The currently used End Dispositions are:
 - a. Call Cancelled
 - b. Call Completed
 - c. Duplicate Call
 - d. Gone On Arrival
 - e. Own Service Obtained
 - f. Serviced On The Scene
 - g. Test
 - h. Towed From Scene
- 14. Previous Call Information provides information for the previous four (4) calls related to the milepost where the incident is located.
- 15. Pre-plan info cards per location i.e. Buildings, Bridges, Gates, Tunnels. Database for the Pre-plan info cards will be generated by the PTC. The CADS Proposer shall identify to the PTC the database format for the proposed CADS. The CADS Proposer shall provide all the required interface to provide this functionality.

3.1.4 Dispatching Incidents

Effectively dispatching resources requires effective use of available information.



- 1. The CADS shall provide tables that contain available resources based on geographic location. These responder resources include Fire, Ambulance, PSP, tow trucks, salvage contractors, Department of Environmental Protection, highway maintenance, and hazardous material contractors.
- 2. The CADS shall allow editing of the available resources based on the proper access level.
 - a. These edit operations shall be possible to be carried out from any available workstation by any system user with proper access level.
- 3. The ability to edit a range of records simultaneously shall be required.
- 4. The system is milepost driven. The PTC needs the ability to make one change (based on a milepost range) and have the system automatically repopulate the affected responses within the specified Emergency Service Number (ESN) box range. Having to manually edit each response in each of the affected ESN boxes is unacceptable. As an example, the system administrator shall select a milepost range and simultaneously update the information for the tow truck operator that is common to that milepost range without having to go through the different records and enter the same information multiple times.

An emergency service zone defines a unique geographical area (geo-coordinates), a roadway identifier, beginning and ending mileposts, a textural description, and the unique set of resources for responding to incidents within the zone. Each emergency service zone is identified by its unique ESN. The resources for each zone and the zone's geographic boundary will vary over time as geo-political boundaries move and private contractor organizations change.

- 5. The CADS shall provide a user interface that permits modifying the zone boundaries and resource assignments for each zone by the System Administrators.
- 6. The CADS shall allow a maximum of 25 unique responders to be assigned to each emergency service zone.
- 7. This ESN database shall have the capacity to hold a minimum of 50,000 ESN's.
- 8. The CADS shall have the ability to support in the future the tracking of each PSP Troop T vehicle's location and status / availability via an interface to the vehicle mobile data unit (MDU) server.
- 9. The CADS shall display an "Available Resources" menu for each incident.
 - a. The contents of the Available Resources menu shall vary as follows.
 - i. Prior to display, the CADS shall populate with the resources assigned to the emergency service zone containing the incident location.
 - ii. All resources that are not marked as IN SERVICE shall be removed from the list.
 - iii. The three closest PSP Troop T vehicles shall be added to the list. These shall be supported by the future functionality described in Item 8 above.
 - iv. The list shall be displayed in the "Available Resources" menu for the incident.
 - v. Each time the list is displayed, the CADS shall update the list in this manner.

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- The CADS shall display all resources and the current status of each shall be displayed in a "Resource Status" menu. Figure 3-3 is an example of an Available Resource menu while Figure 3-4 is an example of a Resource Status menu.
 - a. When an incident is identified and located, the CADS resource location service shall identify the:
 - i. Tow truck company that services that location and the contact information for that tow truck company.
 - ii. Fire Department that serves that location and their contact information.
 - iii. Emergency medical services that serve that location and their contact information.
 - iv. The specific PTC personnel, maintenance facilities and vehicles, PSP Troop T vehicle and officer that are the nearest to the incident.
- 11. A list of current CADS unit status codes that shall be definable and changeable by the System Administrator:

AL	Available at Location	NR	No Response (Fire/EMS)
AP	Available by Pager	OB	On Break
AR	Available by Radio	OD	Off Duty
AS	Available at Station/HQ	OH	On Scene at Hospital
AV	Available for Call	OJ	On Scene at Justice/Court
CZ	Construction Zone	OP	Roadway Lane(s) Open
DS	Dispatched	OS	On the Scene/Location
EH	En-route to Hospital	SD	Special Detail
EJ	En-route to Justice/Court	RP	Routine Roadway Patrol
EP	Traffic Flow Restored	RT	Non-Emergency Transport
ER	En-route to Scene	TS	Out of Service
ES	En-route to Station/HQ	US	Unavailable at Station
NA	Not Available for Call		



38	• Available Resources				×
	Agency	1	Unit	Туре	-
-	AAA-Mid Atlantic - SC20				
-	Abel Brothers Towing - SC	_			
	Abel Brothers Towing - SC 08	8250		20	
	Abel Brothers Towing - SC 08	8251		20	
	Abel Brothers Towing - SC 08	8252		20	
	Abel Brothers Towing - SC 08	8253		20	
	Abel Brothers Towing - SC 08	8254		20	
-	Albrightsville FD - SC 27				
	Albrightsville FD - SC 27	7945			
	Albrightsville FD - SC 27	7946			
	Albrightsville FD - SC 27	7947			
	Albrightsville FD - SC 27	7948			
	Albrightsville FD - SC 27	7949			
-	Allegheny Tunnel				
	Allegheny Tunnel	2996			
-	Ambler EMS - SC 18	_			
	Ambler EMS - SC 18	7250		1	
	Ambler EMS - SC 18	7251		1.	
	Ambler EMS - SC 18	7252		1.	
	Ambler EMS - SC 18	7253		120	-

Figure 3-3: Example of Current Available Resource Menu, for Information Only

Incident #	Agency	Unit	Status	Туре	Assigned
Everett PSP		08552-Tpr	-AIAV	_	Ever06
	Everett PSP	08687-Tpr	-GIOD		Ever01
	Everett PSP	Ever01	OD	-	08687-Tpr-Goo
	Everett PSP	Ever02	OD	~÷	05015-Tpr-Smit
	Everett PSP	Ever03	OD	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
VS0817273663	Everett PSP	Ever04	OS	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	06186-Tpr-Petr
	Everett PSP	Ever05	AV	~ ``	07227-Tpr-Tho
	Everett PSP	Ever06	AV	1	08552-Tpr-Ada
	Everett PSP	Ever07	OD	-	

Figure 3-4: Example of Current PSP Resource Status Menu, for Information Only

3.1.4.1 Resource Location

- 1. The CADS resource location service shall be activated at the operator's option via an icon on the screen or a hotkey (both shall be supported).
- 2. The Available Resource menu shall only show the applicable resources for the specific location of the incident.



- 3. When the mouse is clicked on a resource, the contact information for that resource shall be shown. These resources will be dispatched by the operator.
- 4. When the dispatch has been completed the operator will double click on the resource dispatched.
 - a. This information shall be entered into the incident tracking record for each resource dispatched noting the time and operator performing the dispatch operation.
- 5. As a future functionality, the CAD system shall be capable of sending a dispatch message to PSP Troop T vehicles by sending the message to the MDU server and the MDU server will forward the message to the vehicle.
 - a. It shall also display the confirmation from the vehicle that the dispatch was received and the resource is responding.
- 6. When the dispatch operations have been completed, the CADS shall provide the capability to insert the dispatched unit information into the incident tracking screen.
 - a. This shall be accomplished at the operator's option either via an icon or a hotkey (both shall be supported).
- All phases of incident response shall be tracked by timers. The times described below shall be captured in the incident tracking record and shall be accurate to one second for each "event". Times shall be based on the PTC's time reference as described elsewhere in these requirements.
 - a. Times shall be captured for the following phases of the life cycle of an incident:
 - i. Call entered to Dispatch;
 - ii. Dispatch En-Route;
 - iii. En-Route to On Scene; and
 - iv. On Scene to Clear.
 - v. Note that where multiple resources are dispatched to "service" the incident, the times for each resource shall be tracked separately.
 - b. The timers shall be used for both the dispatcher's incident management and for metrics. These timers shall start and end automatically.
 - c. The CADS shall provide the ability for the operator to override the timer. However, this operation shall be logged with the event tracking which shall note the name of the operator and the original value.
 - d. The CADS shall also set visual and audible alarms with predetermined values to remind the operator if a response is taking longer than planned.
 - e. The timer values shall be selectable by the System Administrator. Note that it shall not be necessary to re-boot or re-initialize the system for the new timer values to take place; the new timers shall take effect with the next event or sub-event as the incident is being tracked / dispatched.
- 8. For Network Control users, the timers are used to track the length of time an incident response takes. Visual and audible alarms are not needed.


3.1.5 Tracking Incident Status

- 1. The CADS shall provide an incident tracking screen that contains all of the pertinent information required by the operator for tracking incident status.
 - a. The screen shall contain the current status on all active incidents;
 - b. The screen shall provide the capability for a PTC System Administrator to add or delete fields and to change titles for all entries on the screen. Figure 3-5 is an example of the current incident tracking screen.
- 2. The incident tracking screen shall, as a minimum, display the following:
 - a. ID (the user identification of the last user to access the incident)
 - b. Township, County (the Township and County where the incident is located)
 - c. Incident #
 - d. Incident type
 - e. Priority
 - f. Additional incident information (text field)
 - g. Location
 - h. Time
 - i. D (an 'X' in this column indicates that units have been dispatched)
 - j. Units (refer to related requirements)
 - k. Primary Dispatch
 - 1. Pending Units

CTID Incident#	Type	Pri	Community	Location	Title	D	Units		Pri Dispi	Fending Units
0001001368	Disabled Vehicle/ Off Roadway	1	DISABLED VEHICLES	DISTRICT 1	1/7/2009 07:59:20	X		Polic	e	
0801001360	Disabled Vehicle/ Off Roadway	1	DISTRICT 2 DISABLED VEHICLES	DISTRICT 2	1/7/2008 06 52 24	x		Polic	¢	
0001001362	Disabled Vehicle/ Off Roadway	9	ESCORT#LAT	A795	1/7/2008 07:15:40	X	8340	Polic	e	
0801001366	Disabled Vehicle/ Off Roadway	1	Ford Expedition - Electrical	T132.2W	1/7/2008 07:51:35	i X.	8180	Polic	e	
0801000778	Request Patrol	1	LANDSLIDE (DO NOT REMOVE)	MASN	1/4/2008-08:41:10	X	05126-Tpr-Moy-DK, HO	41 JkPolic	e	
0801001353	Request Patrol	1	missing money bag	T338.3W	1/7/2008 05:47:48	1. X	04865-Tpr-Strand-OL_K	ingit EPolic	ė	
0001001367	Roadway Obstruction	3	TIRE DEBRI ON ROADWAY	T21.0W	1/7/2008 07:51:44	X	HW100	Polic		

Figure 3-5: Example of Current Incident Tracking Screen, for Information Only



- 3. Calls in the tracking screen shall be colored coded by CADS to enable the users to identify when a call needs attention. The color coding shall be editable by the System Administrator. The color scheme shall include the following minimum colors which are supported by the existing CADS. The current coloring coding scheme is:
 - \$ Gray Normal color for a queued call
 - \$ White incident is accessed and is being viewed by a CADS user
 - \$ Light Blue Call Box (Not dispatched or cleared)
 - \$ Yellow (Alert) CADS record queued without a proper unit assigned. A proper unit is defined as the appropriate responder for the incident. As an example, a tow truck operator is a proper unit for a disabled vehicle and an ambulance is not a proper unit.
 - Red (Alarm) CADS record queued without a proper unit assigned. An audible alarm will sound after the incident timer lapsed. After two minutes a second audible alarm will sound. The CADS shall allow the System Administrator to disable the first audible alarm. The CADS shall allow the System Administrator to set different sounds for both audible alarms (as an example, the first audible alarm is a chirp while the second one is a high pitch tone). The CADS shall also provide a visual alarm such as flashing of the CADS record associated with each audible alarm.
- 4. The Tracking Incident screen shall be user definable and displayed based on window columns.
- 5. The calls shall be displayed in order based on incident type or priority, and displayed by color.
- 6. The user shall be able to configure the order in which incidents are displayed based on his / her needs. The CADS shall have the ability to configure the order in which the incidents are displayed based on the Dispatcher needs. It shall be preset as part of the user profile or can be realigned through clicking on a column. The CADS shall allow for multiple sorting by clicking multiple columns. As an example, sort the date (by clicking on the date column), then sort by incident type (by clicking on the incident type column) and so forth.
- 7. Once an initial incident has been created, e.g., an accident with blockage, a single hot key selection shall activate associated incident(s). The resulting incident would automatically be populated with location caller info etc. As an example, an incident record is created for a multi-car accident along the Turnpike's mainline. This incident requires road closure on both directions which requires the operator to create new incident record to initiate the road closure. The CADS shall allow the operator to copy information from the initial record created for the accident and copy the information to the new record for the lane closure. The CADS shall automatically link the former record with the latter.

3.1.6 Map

1. The CADS map shall be based on the PTC's Geographic Information System (GIS) map. This map has been developed using ESRI software applications and includes all turnpike roadways statewide. As part of this project, the CADS shall interface with the existing PTC map by displaying all the required graphical information such as incident icons and Emergency Service Number (ESN) as described below:



- a. The Proposer shall include all turnpike specific devices and locations on the map. The devices and locations to be added to the GIS map will be provided by the Commission.
- b. Currently an ESN includes several mileposts, but, in a new scheme that the CADS Proposer shall develop as part of the new CADS shall be defined sequentially in 1/10th of a mile increments matching each 1/10th milepost along the turnpike to more accurately identify the incident location. The existing ESN's shown on the GIS map are developed by the PTC GIS consultant. It shall be the Proposer's responsibility to create the new ESN and populate the initial database. As stated in section 3.1.3, the database shall have a minimum of capacity of 50,000 ESN, each of which include a minimum of 25 response boxes (A total of 1,250,000 database entries). The GIS map and data is based on latitude and longitude. Figure 3-6 is an example of a Commission GIS map.





3.1.7 Operator Support Tools

3.1.7.1 Console Setup

- 1. The CAD system shall provide the user with the capability to identify the desired user configuration and save each user's configuration.
 - a. When a user logs in, the CAD system shall initialize the CADS with the user's specific configuration.
 - b. The configuration shall be updatable by the user to support current work efforts.

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c. Each Dispatch user shall be able to select one or multiple districts to work for each shift and can update the districts during the work shift, aforementioned in section 3.1.2-8b.

3.1.7.2 Common place Database

The Common place database currently contains nearly 1200 records and shall be expandable to accept additional common places for existing and new turnpike sections. The contents of the database are locations of note along the turnpike referenced to the nearest milepost. These locations are often used to locate incidents on the turnpike.

- 1. The Common place Database shall be searchable by common place name and alias.
- 2. The search shall return the common place name, the nearest milepost and the related latitude and longitude for the common place name searched for.
- 3. The common place database shall initially be loaded with the existing common places and it shall be updatable by the System Administrator.
- 4. The Common place Database shall be expandable to a minimum of 20,000 records by the System Administrator through the normal System Administrator's user interface.

3.1.7.3 Rolodex Database

The Roladex Database currently contains over 2000 records and shall be expandable to accept additional records. The rolodex database is used much like a phone directory by the dispatchers. It contains contact information for Turnpike related agencies and personnel.

- 1. The Rolodex Database shall be searchable by name and type. A type is a classification of the contacts. This includes HAZMAT responder, Hospital, Towing Company, PSP, PTC Maintenance, etc.
- 2. The search shall return the name, phone number, and address for the name searched for.
- 3. The Rolodex database shall initially be loaded with the existing contact information and it shall be maintainable by the System Administrator.
- 4. The Rolodex Database shall be expandable to a minimum of 20,000 records.
- 5. An additional field on the Rolodex is required to allow for network control and dispatchers to virtually have their own databases. Different users shall be able to filter the main rolodex to create a customized rolodex. As an example, network control shall be able to create customized rolodex not to include contacts such as towing company, fire department, etc. that are not applicable for their specific duties or functions. The creation of customized rolodex shall not affect the main rolodex database. The CADS shall have the ability to support the creation dof unlimited customized rolodex.
- 6. The CADS shall allow users to print individual, selected (either by manual selection of sorting) or the entire rolodex. The print format shall be user definable. As an example, the user shall be able to print individual entries as separate "cards" or print a selected entries or the entire rolodex in tabular format.



3.1.7.4 Reports

Reports are generated from the CADS for some purposes and the data is analyzed using Crystal Reports to develop other reports.

- 1. The CADS shall provide incident data in a database compatible with Crystal reports.
- 2. System Administrators shall be trained on the database to allow them to recreate existing reports.
- 3. The ability to create a report based on any data field shall be feasible.
- 4. The canned reports using a drop down menu shall include the following:
 - a. Dispatcher
 - i. Dispatcher Log by Dispatcher Name
 - b. Incidents
 - i. Incidents by Number
 - ii. Incidents by Type
 - iii. Incidents by Agency
 - iv. Incidents by Report Number (T-number)
 - v. Append by Number
 - vi. Incidents by Disposition
 - vii. Incidents by Origination Type
 - viii. Incidents by Address
 - c. Message Log
 - i. Message Log by User
 - ii. Message Log by Unit
 - d. Unit Reports
 - i. Unit Log
 - ii. Unit Status Report
 - e. Vehicle Stops
 - i. Vehicle Stops by Unit
 - ii. Vehicle Stops by Agency
 - f. Unverified Addresses
 - g. Recall List
- 5. Reports Created in Crystal Reports (outside of CADS):
 - a. PSP Reports
 - i. All reclassified Incidents Station and Code
 - ii. History vs. RMS
 - iii. Incidents by Station and Code(all)
 - iv. Incidents by Station and Code
 - v. Not in RMS3
 - vi. Not in RMS Report Numbers
 - vii. (21 Overtime Reports not included as SAP/PRIDE will do this)
 - viii. Pending RMS



- ix. PSP Report Number by Date
- x. PSP Report Number
- xi. Reclassification Report
- xii. RMS Pending
- xiii. Station Incident Total (all)
- xiv. Station Incident Total
- xv. Summary Incidents by Station
- xvi. Summary Incidents by Station_2007
- xvii. Total Incidents
- xviii. Unit History
- 6. Call Box Reports selectable by pull-down menu:
 - i. Monthly Call Box Report by day
 - ii. Monthly Call Box Report by Location (milepost)
 - iii. Yearly Call Box Report by Location (milepost)
- 7. Other Reports selectable by pull-down menu:
 - i. Monthly Incident Type counts (dispatched
 - ii. Accident Counts by date range and location range
 - iii. Monthly First Responder call (by unit)
 - iv. Outstanding Radio Tech Calls (Network Control (daily)
 - v. ALI (Automatic Location Identifier) Editor Database
 - vi. Common Place
 - vii. Rolodex
 - viii. ESN Report
 - ix. Response Box Report
 - x. Various System Maintenance Reports based on incident type and unit assigned (Network Control)
 - xi. Track all incidents in relation to original incident number

3.1.7.5 T-Numbers (PSP report numbers)

A T-Number is a secondary incident number that is tied to an original PTC event (incident) number. This helps PSP track incidents based on their internal departmental procedures.

- 1. The CADS shall have the ability (System Administrator definable) to automatically assign a Tnumber based upon the resource unit (trooper or car) assigned to the call, the incident type of the call, and the location of the call. If multiple resources are assigned to the same call, both resources receive the same T-number.
- 2. The T-Number shall be in the following format: "T" followed by a two digit code followed by a sequential 7 digit number. For Example: T050000001, T050000002, T050000003, etc. The CADS shall have the ability to assign report number prefixes and a "starting" point for the sequential 7 digit number to each agency. Since the agencies cover a specific location range (area), this is an acceptable substitute for the location filter. In the example, "T05" would be the report prefix for a specific agency to which the assigned resource unit belongs.



- 3. The CADS shall allow an operator to manually assign other station numbers to units for "assist other PD" calls.
- 3.1.7.6 Post Incident Processing
 - 1. The CADS shall allow a user (based on permissions) to search for a previous incident (event) number by unit, agency, location, incident type, date, "T-number" or any combination thereof.
 - 2. Once the previous incident (event) number is found, the CADS shall provide a user interface that allows the user to add or edit a four digit reclassification code.
 - 3. The CADS shall also provide user definable reports based on these four digit reclassification codes. The reports may include (as selected by the user) but are not limited to the following data fields: incident (event) number, T-Number, date range, 4 digit reclassification code, agency, counts and totals of those data fields, or any combination thereof.

3.1.8 Other CADS Operational Requirements

There is a need to collect metrics throughout the incident process to determine how effectively the incidents are managed. The information needs to be collected accurately and stored in an updatable manner. During the process of entering the incident information, the incident is classified and assigned to responders. The CADS needs to support these reporting activities.

3.2 Interface Requirements

The PTC required CADS interfaces are identified below:

3.2.1 User Interface

The user interface shall support:

- 1. Multi-level user login (same as security levels). A system Login Flow is shown in Figure 3-7. The login levels shall include:
 - a. System Administrator shall have the ability to use all CADS functions and in addition to update database definitions, tables, and configuration data such as timers.
 - b. Dispatcher shall have the ability to use all CADS functions for incident tracking and management (Not network events)
 - c. Network Control Group shall have the ability to access all Network Control Group functions and have the ability to perform all Network Management operations
 - d. Post Incident Process shall have the ability to view and generate reports, in addition can add code to existing PSP incident field only
 - e. View Only shall have the ability to only view and generate reports via web interface. This level shall not have the ability to change any data
- 2. User definition of initial screens and user defined functions. Store user specifically defined login.
- 3. Enable a user to login to one or more districts and change (add or remove districts from his/her responsibility) as needed without logging out.



- 4. Enable user to select on which display to place the various screens e.g., call information screen, incident tracking screen, map, etc.
- 5. Support the use of all data entry and functions identified in this document.
- 6. ID County enables user to identify the county and township where a specific incident occurred
- 7. Figure 3-8 is an example of CAD screens on a display. Each of the screens shall be assignable to any of four hardware displays.





Figure 3-7: System Login Flow Diagram



General C.A.D. Terminul, 97 Pesition Name: CAD Admin Type Pulice, Fire J.MS.Sherth ALV.285 Maintenance Staff at: Wrecher		
Nat Reports 111 Relation Colonau Place Departy Halaciant Place - Response Window Help Tech Legant		
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Figure 3-8: Example of Current CAD Screens on a Display, for Information Only

3.2.2 PSP Troop T Vehicle Mobile Data Unit Interface

The PSP currently use a BioKey MDU system. The CADS shall have the ability to fully interface with BioKey's MDU system. The CADS system shall provide all information in the MDU's required format.

3.2.3 Interface to Other Agencies' Vehicle Location Systems

The CADS Proposer shall support the PTC in defining interfaces to other agency vehicle location systems that are operated in support of the turnpike. These tasks will be defined and performed under time and materials tasks.

3.2.4 Vision 21 (Call Box) Interface

The CADS shall fully support the interface to the Vision 21 Call Box System as described in Attachment A.

3.2.5 Remedy Interface

The PTC uses a software called Remedy to generate, track and manage trouble tickets for Information Technology (IT) network incident tracking. The PTC may migrate the Network Control incident tracking tasks to Remedy in the future. The CADS Proposer shall provide information on the interfaces and data format that would allow the PTC to integrate Remedy into the new CADS in the future.

3.2.6 Post Incident Processing Interface

The CADS shall provide an interface to the Post Incident Processing function for authorized users via both CADS workstations and PTC PCs via a web based interface. The user shall have the ability to use all Post Incident Processing functions.

3.2.7 Fire and EMS

The fire and EMS interface shall be accomplished through the use of the available resource screen. The CADS shall display this screen for the dispatcher based on the incident location. The screen shall provide



the contact information for the Fire and EMS based on the incident location. The operator will use the contact information to call or radio the appropriate resources.

Note that the user interface shall be such that the incident location and other information is shown simultaneously with the resource screen to allow the dispatcher to read the information to the service provider. Double clicking on the entry shall also automatically enter the dispatch function information into the incident record along with the date/time of the dispatch operation.

3.2.8 Wrecker Service Interface

The wrecker service interface shall be accomplished in the same manner as the Fire and EMS through the available resource screen. The CADS shall display this screen for the dispatcher based on the incident location. The screen shall provide the contact information for the wrecker service based on the incident location. The operator will use the contact information to call or radio the appropriate resources.

Note that the user interface shall be such that the incident location and other information is shown simultaneously with the resource screen to allow the dispatcher to read the information to the service provider. Double clicking on the entry shall also automatically enter the dispatch function information into the incident record along with the date/time of the dispatch operation.

3.2.9 MIST Interface

The CADS shall fully support the interface to the MIST system as described in Attachment B.

3.2.10 Hazmat Interfaces

The CADS shall provide a link to an electronic version of the PTC's Emergency Response Manual. This manual identifies response plans for various Hazmat incidents. The dispatch uses this manual in the event of a Hazmat incident. (Dispatch function)

The HAZMAT Emergency Response Manual shall automatically open in an independent window and shall be fully searchable, printable, etc. depending on the interface provided for this manual; such interface is provided by others but shall be invoked by the CADS. Closing this application shall have no effect on the CADS operation.

3.2.11 CLEAN/NCIC Interface

The CADS shall provide access (only for users with proper authorization) to the Commonwealth Law Enforcement Assistance Network (CLEAN) and the National Crime Information Center (NCIC) systems at every workstation. Access must be assignable. The dispatchers routinely run searches based on automobile license tags and names for those involved in turnpike incidents.

The CADS shall accept the information returned from the CLEAN / NCIC search and insert it into the incident information log. (Dispatch function)

3.2.12 TDD Interface

The CADS shall integrate a Telecommunications Device for the Deaf (TDD) at every workstation. This is currently accomplished by tapping the telephone handset audio, splitting it with a TC-1009-DA Office Konnector, and routing it to an external 300 baud Ultratec Intelemodem (IT-2) connected to a serial port on the CADS workstation. The Proposer shall propose their recommended solution.



4. DESIGN REVIEW MEETING

The CADS Proposer shall schedule design review meetings to be held at the PTC Headquarters. At the design review meeting, the CADS Proposer shall describe and present the proposed design of the CADS. The CADS Proposer shall step the PTC through all the functionalities and GUI of the proposed CADS. The CADS Proposer shall provide a detailed presentation of all the screen shot or GUI layouts, the schemes and logical flows in exercising all the required controls and functionalities via the CADS GUI.

There shall be three design review meetings. Each meeting shall be scheduled for no less than two days but not to exceed five days. The actual duration of each design review meeting will depend on the amount of information to be reviewed and the number of issues to be resolved.

Design Review Meeting 1 (DRM 1)

This shall be the initial design review meeting where the CADS Proposer shall present the proposed CADS including the complete GUI design to the Engineer prior to it being submitted and approved as part of the submittal process. The PTC shall provide comments within 10 business days of the completion of DRM 1. The CADS Proposer shall incorporate all comments prior to the second design review meeting. DRM 1 shall coincide with the design review of the proposed CADS.

Design Review Meeting 2 (DRM 2)

The CADS Proposer shall present the revised GUI design to PTC for further review and comments. The Engineer shall provide comments within 10 business days of the completion of DRM 2. The CADS Proposer shall incorporate all comments prior to the final design review meeting.

<u>Design Review Meeting 3 (DRM 3)</u> After comments from DRM 2 have been incorporated, the CADS Proposer shall present the final CADS.

The CADS Proposer shall address all the comments within 30 days after comments have been received from PTC for each design review meeting.

The CADS Proposer shall provide all materials necessary for the design review meeting including handouts, projectors and any presentation materials. The CADS Proposer shall provide fifteen sets of hard copies assembled in loose-leaf binders of all design review meeting materials. The CADS Proposer shall also provide five soft copies in CD of all the CADS GUI or screen shots. The soft copies shall be in a format readable using Microsoft Office Suites applications such as Word or PowerPoint.



5. TESTING REQUIREMENTS

The following tests shall be performed for the CADS:

- Stand-Alone Test (SAT)
- System Acceptance Test

The CADS Proposer shall be responsible for developing detailed test procedures for each type of equipment and for conducting the specified test to verify satisfactory operation of that piece of equipment. The test procedure shall, as a minimum, contain a description of the test with the expected results and verification criteria. The test procedures shall be complete including the sequence of conducting the tests, the pass/fail criteria, drawings showing the test set-up, required configuration settings for the piece of equipment under test and the test equipment, and procedures for making the test measurements.

Data sheets shall be provided listing the test step, expected result, verification criteria and space to record the actual result and the make, model number and serial number of all test equipment used. Each data sheet shall have a signature section for the CADS Proposer and for the PTC that shall both witness each test.

Six (6) copies of the proposed test procedures and data forms shall be submitted to the PTC for approval prior to the tests. Only approved test procedures shall be used for the test. A minimum of ten (10) working days shall be allowed for the PTC's review and approval of the test procedures.

Prior to scheduling the test, the CADS Proposer shall conduct a dry run of the test using the approved test procedure. Six (6) copies of the test data from the dry run shall be submitted to the PTC a minimum of ten (10) working days prior to scheduling the test. Any changes required to the approved test procedure as a result of the dry run shall be noted in this submittal.

The actual test shall not be scheduled until the test procedure has been approved and the dry-run test has been conducted and the dry-run test data sheets submitted. The actual test shall also not be scheduled until the required manuals have been submitted in accordance with the documentation requirements of this FRD.

The CADS Proposer shall furnish copies of data forms containing all of the data taken, as well as quantitative results for the test. The data forms shall be witnessed and signed by the equipment manufacturer and/or the CADS Proposer and by the PTC. Ten (10) copies of the data forms, including the original test data sheet, shall be sent to the PTC with one (1) form furnished to the PTC or his representative when either the PTC or his representative is present at the time of testing.

The results of each test shall be compared with the requirements specified herein. Failure to conform to the requirements of any test shall be counted as a defect, and the piece of equipment shall be subject to rejection by the PTC. Rejected piece of equipment may be offered again for retest provided all non-compliance has been corrected and retested by the CADS Proposer and evidence thereof submitted to the PTC. The PTC shall also witness all retest.

The CADS Proposer is not responsible for the failure of a piece of equipment or software not provided as



part of this contract. In the event of such a failure, the test shall be stopped until the failed piece of equipment or software is repaired by the responsible party.

The tests on all of one type of equipment must be completed within five (5) calendar days from the scheduled start date. Any delays in performing all the required tests will result in the CADS Proposer paying the costs of providing the PTC's representatives for the additional testing.

Stand-Alone Test (SAT)

The CADS Proposer shall conduct SAT for the CADS. Prior to the deployment of the CADS, the CADS Proposer shall demonstrate to the PTC that the new CADS meet all the functionalities that the CADS Proposer agreed to comply in the Bid compliance matrix.

System Acceptance Test:

Satisfactory completion of the System Acceptance Test shall be the basis for system acceptance.

The PTC will perform the System Acceptance Test following the completion of the CADS Integration Test.

The System Acceptance Test shall, as a minimum, exercise all functional operations of the CADS. The test shall also include a sixty (30)- day period of normal operations without any failure that will start after the completion of the Integration Test.

In the event of a failure of the CADS, the sixty (30)-day clock shall stop. The CADS Proposer shall troubleshoot the cause of failure and make any corrections. The System Acceptance Test shall then start from the beginning.

In the event of failure of each piece of equipment or software installed by others, the sixty (30)-day clock will be stopped for the affected portion of the system until the problem is corrected. The sixty (30)-day period will then resume for the affected portion of the system.

If the CADS or a piece of related equipment has been modified as a result of a System Acceptance Test failure, a report shall be prepared and delivered to the PTC prior to retesting. The report shall describe the nature of the failure and corrective action taken. If a failure pattern, as defined by the PTC, develops, the PTC may direct that design and construction modifications be made to the CADS without additional cost to the contract or extension of the contract period.



6. DOCUMENTATION

The following documentation shall be provided:

<u>Functional Control Document</u>: The CADS Proposer shall submit to the PTC for approval a document fully describing how all of the CADS functions described in the contract documents shall be implemented. The document shall include flow charts, block diagrams and a complete description of each function. Ten (10) copies of the document shall be submitted to the PTC for approval.

The PTC shall have thirty (30) days to review the document. The Stand-Alone test shall not be scheduled until this document has been approved by the PTC.

<u>GUI Interface Document:</u> The CADS Proposer shall submit to the PTC for approval a document describing the GUI including pictures of the proposed screens and a description of the control and monitoring features. Ten (10) copies of the document shall be provided. This manual shall also include a description of the API. The PTC shall have thirty (30) days to review the document. The staging test shall not be scheduled until the document has been approved by the PTC.

<u>Equipment Manual:</u> If new equipment that is not provided by the PTC is provided, the equipment manuals shall contain the following:

- Complete and accurate schematic diagrams.
- Complete installation and operation procedures.
- Complete performance specifications (functional, electrical, mechanical and environmental) of the unit.
- Complete list of replaceable parts including names of Proposers for parts not identified by universal part numbers such as JEDEC, RETMA or EIA.
- Complete maintenance and troubleshooting procedures including flow charts to provide fault isolation down to the lowest replaceable module.

<u>Maintenance Manual:</u> The maintenance manuals shall contain maintenance and troubleshooting charts and procedures to permit fault isolation to the lowest replaceable unit level.

<u>Operations Manual</u>: The operations manual shall include complete procedures for the set-up and use of CADS and its related equipment. The operations manual shall include snap shots of the various GUI screens along with descriptions of each of the control and alarm features.

Software Manual: The software manual shall contain the following:

- Documentation sufficient to enable an experienced programmer to modify the software. This shall include configuration information, make file description, code management documentation, and instructions in how to setup and install all software on a machine with an empty, formatted hard drive.
- All source code shall include in-line comments and documentation in the header files to identify the function being performed, variables, and algorithms, control strategies, errors, etc.
- All error codes shall be clearly documented in a single manual for easy reference.
- Detailed documentation regarding the software structure including object models, timing dependencies, linkages, and relationships between functions and procedures.
- Procedures for loading all software and firmware including but not limited to EPROM preparation.



- Detailed database documentation for the source code used by the equipment. The State shall have the unrestricted right to use this documentation for its system development.
- Description of all function calls, classes, subclasses, database schema, application of COTS software, and object models.

The software documentation shall be submitted to the PTC for review and approval. The software documentation shall be provided prior to final acceptance and payment for the bid item. The final acceptance for the components and system delivered shall not occur until the software documentation has been reviewed, approved, and accepted by the PTC. If subsequent changes are required due to software defects, the provided documentation must be updated within sixty (60) days of the software correction.

The CADS Proposer shall submit to the PTC six (6) copies for review and approval prior to the final submission. The review copies shall be submitted prior to the start of the CADS acceptance test. The final copy shall be submitted within thirty (30) calendar days of receipt of review comments from the PTC. Any changes resulting from the testing of the units shall be incorporated into the final submission.



7. APPENDICES

7.1 Appendix A

7.1.1 Dispatcher Incident Types

ict_incident_type_id	ict_incident_type	ict_priority	ict_pri_dispatcher	Response Box at Present
156	Abandoned Vehicle	1	1000	No
153	Accident w/ inj.	3	1000	Yes
22	Accident w/o inj.	2	1000	Yes
41	Assist Other Agency	2	1000	No
127	Call Box - Accident	2	1000	Yes
124	Call Box - Medical	2	1000	Yes
128	Call Box - Multiple Buttons	2	1000	Yes
125	Call Box - Police	2	1000	Yes
126	Call Box - Service	2	1000	Yes
152	Construction	1	1000	No
4	Criminal Incident	3	1000	No
159	Damage Claim	3	1000	No
17	Disabled Vehicle/ Off Roadway	1	1000	Yes
157	Disabled Vehicle/ On Roadway	3	1000	Yes
154	Domestic Security Check	1	1000	No
39	Escort, Other	3	1000	No
29	Fare Evasion	2	1000	No
8	Fire	3	1000	Yes
132	Fire Box - Fire	3	1000	Yes
141	HazMat - Fuel Spill	3	1000	Yes
32	Medical	3	1000	Yes
34	Motorist Assist	1	1000	Yes
155	Non - Contracted Service	1	1000	No
31	Police Information	1	1000	No
38	Prison Vehicle	2	1000	No
148	Request Patrol	1	1000	No
37	Roadway Obstruction	3	1000	Yes
30	Traffic Control	2	1000	Yes
35	Traffic Violation	2	1000	No
24	Tunnel Accident-Fire	3	1000	Yes
149	Weather Warning	1	1000	No



ict_incident_type_id	ict_incident_type	ict_priority	ict_pri_dispatcher	Response Box at Present
135	Call Box - Base Stn Trouble	1	8000	No
55	Call Box/Fire Box System	1	8000	No
117	Carpentry	3	8000	No
137	Early Warners - Mtc	3	8000	No
118	Electrical	2	8000	No
76	Fare Collection System	1	8000	No
150	Fire Box - Test Failure	3	8000	No
133	Fire Box - Trouble	3	8000	No
129	Fuel Management System	3	8000	No
121	HAR - Highway Advisory Radio	0	8000	No
119	HVAC	0	8000	No
131	IBM	0	8000	No
78	MCS-11 System (Tower Alarms)	3	8000	No
81	Microwave System	0	8000	No
82	Mobile Radio	0	8000	No
86	Network WAN / I.T.	0	8000	No
116	Plumbing	0	8000	No
136	RemVac - Tunnels	3	8000	No
151	RTMS / Remote Traffic Monitor	0	8000	No
122	RWIS	3	8000	No
120	Security/CCTV	0	8000	No
90	Telco T1 / Leased ckts	0	8000	No
105	Telephone System	0	8000	No
123	Variable Message Sign	0	8000	No
115	VHF System	0	8000	No
158	VSLS - Variable Speed Limit Sign	0	8000	No

7.1.2 Network Control Incident Types



7.2 Glossary

*11	Turnpike Call in Number
ACK	Acknowledge
CAD	Computer Aided Dispatch
CADS	Computer Aided Dispatch System
CLEAN	Commonwealth Law Enforcement Assistance Network
Commission	Pennsylvania Turnpike Commission
EMS	Emergency Medical Services
ENS	Emergency Notification System
ERO	Eastern Regional Office
ESN	Emergency Service Number
ETX	End Text
GB	Giga Byte
GIS	Geographic Information System
GPS	Global Positioning System
Hazmat	Hazardous Material
HP	Hewlett Packard
ID	Identification
ITS	Intelligent Transportation Systems
MIST	Management Information System for Transportation
MDU	Mobile Data Unit
NAK	Negative Acknowledge
NCIC	National Crime Information Center
PennPike	Pennsylvania Turnpike
PSP	Pennsylvania State Patrol
PSP Troop T	Pennsylvania State Patrol unit supporting the turnpike
PTC	Pennsylvania Turnpike Commission
RAM	Random Access Memory
SQL Server	Microsoft Sequel Server Database
STX	Start Text
ТОС	Traffic Operations Center
USB	Universal Serial Bus



VHF	Very High Frequency
VMS	Variable Message Sign



8. ATTACHMENTS



8.1 Attachment A

Vision21.doc



8.2 Attachment B

Mist.doc



Attachment A - Vision 21 Interface

The CADS shall provide an interface to the Vision 21 System Processor via an RS-232 port. This interface auto-generates callbox calls in CADS. Dispatchers receive all call except for firebox trouble calls, which are forwarded to Network Control's call queue. Some definitions that apply to this interface follow:

- \$ Indicates that the number following is in hexadecimal (all other numbers are in decimal).
- ACK ASCII Code \$06 Positive acknowledgment receipt of message
- NAK ASCII Code \$15 Negative acknowledgment receipt of message
- STX ASCII Code \$02 Start of Text
- ETX ASCII Code \$03 End of Text from CAD to Visions 21 only.
- * ASCII Code \$FF End of Text from Vision 21 to CAD.

The objective of the serial communications with Signal Communications' Vision 21 System Processor (referred to as the Vision 21) is to allow the Vision 21 to send call and status information to and receive call confirm, enable, and disable messages from CAD software. The CADS will connect via one of the Vision 21's serial ports and multiple CAD systems may be connected simultaneously.

Vision 21 Vendor Contact Information:

Signal Communications Corporation	Signal Communications Corporation
PO Box 2588	4 Wheeling Avenue
Woburn MA 01888-1188	Woburn MA 01801
www.sigcom.com	(781) 933-0998

1.0 Vision 21 Communications Protocol

This section details the communications protocol for messages from the Vision 21 to the CAD.

All messages from the Vision 21 will begin with the STX character, followed by a data stream and end with an ETX character. The data stream will be terminated by a checksum byte, calculated over the data bytes in the message (excludes STX, ETX and checksum itself). The checksum used is the two's complement of an eight bit binary summation (ignoring overflow) of the data bytes. (Note: since the call and status messages contain bitmapped data and an eight bit checksum, it's possible that part of a message could look like an ETX)

Following the receipt of the ETX from the Vision 21, the CAD must acknowledge the message. The characters used for this purpose are ACK indicating a positive acknowledgment of a message received with no error in the checksum and NAK indicating a negative acknowledgment of a message received with an error detected in the checksum. The CAD must respond with an ACK or NAK within one second (maximum) of receipt of a message from the Vision 21. If the Vision 21 receives a NAK within the time limit, the preceding message will be retransmitted. If no ACK or NAK is received by the Vision 21 within the time limit, an unrecognized character is received or a NAK is received in response to the retry, trouble status will be initiated at the Vision 21.



Once the Vision 21 initiates a message transmission, it will not accept any CAD message until its message has been successfully acknowledged.

2.0 Vision 21 to CAD messages

The Vision 21 will transmit three types of fixed length messages to the CAD: a call information message, a communications check message, and a status message. The data streams of the messages will begin with a one byte message type which will identify to the CAD the type of message to follow. Call information messages will be identified by ASCII Code \$01. Communication checks will be identified by ASCII Code \$05.

2.1 Call Information Messages

Call information messages will be sent by the Vision 21 to the CAD upon receipt by the Vision 21 of a valid call box message.

Call information messages will have the following format: one byte message type (\$01), a four byte bitmapped function code, a six byte (12 digits) box id code and a one byte checksum.

The four byte function code is a bitmapped representation of the function(s) received by the Vision 21. Taken as a 32 bit binary number (most significant digit first received), bit 0 corresponds to the first function in the Vision 21 function database and bit 31 corresponds to the thirty second function in the Vision 21 database.

Bit	Function Name	Bit	Function Name
0	Service	16	Accident
1	Police	17	Function 18
2	Medical	18	Function 19
3	Master	19	Function 20
4	Trouble	20	Function 21
5	Low Battery	21	Function 22
6	AC Fail	22	Function 23
7	Reset	23	Function 24
8	Test	24	Function 25
9	Tilt / Intrusion	25	Function 26
10	Solar Panel Fail	26	Function 27
11	Clear	27	Function 28

The standard bit assignments are as follows:



12	Multiple Alarms	28	Function 29
13	Zone Alarm	29	Function 30
14	Zone in Trouble	30	Function 31
15	Function 16	31	Function 32

A one in the corresponding bit location indicates the function was sent; a zero indicates the function was not sent. Multiple functions may be set in a byte.

The six byte box id code represents the received box number in BCD format, two digits per byte, most significant digit first. The box id codes will be zero filled in front to accommodate the 12 digit format.

Example:

Call message from box 1234 with the Service button selected.

STX \$01 \$00 \$00 \$00 \$01 \$00 \$00 \$00 \$00 \$12 \$34 \$B8 ETX [ACK]

Where the characters in [] are sent by CAD.

2.2 Communication Check Messages

Approximately every minute, the Vision 21 will initiate a communications check. The purpose of this check is to verify to the Vision 21 that the link is intact and the CADS is running. The communication message is a fixed message as follows:

STX \$06 \$FA ETX [ACK]

Where the characters in [] are sent by the CAD.

2.3 Status Messages

On a change in the System Processor status, the Vision 21 will initiate a status message. These messages will be sent when the trouble condition is detected and when it clears.

Status messages will have the following format: a one byte message type (\$05), a one byte bitmapped status code and a one byte checksum. Status changes will be sent one at a time. The status code will be bitmapped as follows:

Bit	Status Condition
0	Low Battery
1	AC Fail
2	Card Fail
3	Charger Fail



4	Printer Error
5	Late Test (Base Station or Master Box)
6	Not Used
7	Clear

Upon the detection of the trouble condition, the Vision 21 will send the status message with the corresponding bit set. Upon detection of the restoration of the trouble condition, the Vision 21 will send the status message with the corresponding bit and the Clear bit is set/

Examples:

Detection of a charger failure

STX \$05 \$08 \$F3 ETX [ACK]

Charger Failure clear

STX \$05 \$88 \$73 ETX [ACK]

Where the characters in [] are sent by the CAD.

2.4 Vision 21/CAD Communication Error Handling

The Vision 21 will initiate a trouble condition in response to any of the following communication errors:

- The CAD fails to return an ACK or NAK within one second of a Vision 21 message transmission.
- The CAD returns a NAK in response to a message retransmission.
- The CAD returns a character other than an ACK or NAK.

The Vision 21 will continually attempt to retransmit the message until it is successful.

2.5 CAD Communications Protocol

This section details the communications protocol for messages from CAD to the Vision 21.

Messages from the CAD will begin with an STX character, followed by a data stream and end with an ETX character.

Following the receipt of the ETX from the CAD, the Vision 21 will acknowledge the message. The characters used for this purpose are ACK indicating a positive acknowledgement of a message received and NAK indicating a negative acknowledgement of a message received. The Vision 21 will respond with an ACK or NAK within one second (maximum) of receipt of a message from the CAD.



2.6 CAD to Vision 21 messages

The Vision 21 will accept two messages from the CAD: enable call confirm and disable call confirm. The enable call confirm data bytes will consist of the single ASCII Code \$11. The disable call confirm data bytes will consist of the single ASCII Code \$18.

Enable and disable call confirm messages should only be sent to the backup Vision 21. The enable call confirmation message should be sent by the primary CAD when it loses its communication link with the primary Vision 21. The disable call confirmation message should be sent by the primary CAD when its communication link with the primary Vision 21 is restored.

Examples:

Enable call confirm

STX \$11 ETX [ACK]

Disable call confirm

STX \$18 ETX [ACK]

Where the characters in [] are sent by the Vision 21.

Once the Vision 21 receives an STX, it will not attempt to initiate a message until it has acknowledged the incoming message with an ACK or NAK.

2.7 CAD/Vision 21 Communication Error Handling

The Vision 21 will respond with a NAK in response to any of the following conditions:

- More than one second elapses between the receipts of bytes after the Vision 21 receives an STX.
- The data stream of the message contains a byte other than enable or disable call confirm.
- An ETX does not follow the enable or disable call confirm byte.
- ٠

2.8 Serial Communications Parameters

The Vision 21 and CAD shall communicate at between 300 and 19200 Baud, with 8 Data Bits, 1 Stop Bit, and No Parity.



Attachment B – MIST Interface

Telvent Farradyne's **MIST** (Management Information System for Transportation) is a robust Advanced Transportation Management System (ATMS) software product that integrates management of all ITS field devices, including traffic signal controllers, CCTV cameras, dynamic message signs (DMS/VMS), traffic detectors (RTMS), and others, into a single software platform. This unified system has one comprehensive database and one consistent Graphical User Interface. The PTC MIST system automatically imports and filters relevant roadway incident data from the CAD system's current call queue. MIST processes the information and in turn "pumps" this data to our public interactive web map.

The existing CAD system utilizes software (QueueMonitor.exe) that automatically monitors the curq table (current call queue) in the CAD system's SQL database and creates a flat text file of all calls associated with the "radio operator" user group. This file (CurQ.txt) is updated once every minute. **Maintaining this data link in its present form to the MIST system is a requirement.** The MIST system will be unable to process CAD data if we deviate from the present flat file format.

MIST Vendor Contact Information:

Joerg "Nu" Rosenbohm

Telvent Farradyne Inc. 3206 Tower Oaks Blvd. Rockville, MD 20852 Tel: 301-468-5568

www.telvent-farradyne.com

CAD curq table flat file example:

|Roadway Obstruction|2007-11-15 06:38:01.111|A66.2S|||0711004385|2561542|508957.71875

|Traffic Control|2007-11-15 07:24:34.1134|T342.8W||volume|0711004396|2704322|310746.875

|Traffic Control|2007-11-15 07:25:47.1147|T326.6E||volume|0711004397|2626175.75|284041.15625

|Accident w/o inj.|2007-11-15 07:42:13.1113|A53.5N||O/T VHL IN R/L|0711004407|2579004.75|461681.1875

|Disabled Vehicle/ Off Roadway|2007-11-15 07:55:53.1153|T32E||red p/u & 29 ft tlr|0711004408|1329852.25|489360.84375

|Accident w/o inj.|2007-11-15 07:56:59.1159|A96.5N||SINGLE VHL OFF THE ROAD|0711004409|2527220.5|643436.625

|Disabled Vehicle/ Off Roadway|2007-11-15 07:59:17.1117|T246.5E||BLUE TOYOYA SIANA - F/G/S|0711004411|2235298.25|320806.03125

|Disabled Vehicle/ Off Roadway|2007-11-15 08:14:38.1138|T337W||BLACK PORSHE|0711004412|2677103|297550.09375

|Accident w/o inj.|2007-11-15 08:21:14.1114|T347.2E||VHL VS BARRIER|0711004414|2727087.75|310485.3125

|Fare Evasion|2007-11-15 08:25:54.1154|T342.8W||ln 10 coll 2331|0711004416|2704322|310746.875

|Fare Evasion|2007-11-15 08:26:31.1131|T75.3W|||0711004417|1451432.375|330399.6875

|Traffic Control|2007-11-15 08:27:47.1147|A20.1N||volume|0711004418|2661432.25|292596.34375



QueueMonitor ini file example:

[main] error_log=F:\Queue\CARQactivitylog.txt maxerrors=2 [timer] wakemins=1 totalsleeptimes=0 1sleeptime=04:20 1waketime=05:00 2sleeptime=00:00 2waketime=00:00 [Options] SqlString=Select crq_incident_type, crq_date_of_call, crq_loc_streetname, crq_loc_streetsx, crq_loc_community, crq_incident_number, crq_loc_lat, crq_loc_long from curq where $crq_dispatcher_type = '1000'$ CurQfile=F:\Queue\CurQ.txt header = delimitingcharacter = firstdelimiter=-1 [sql] cad connect=UID=*****;PWD=*****;DATABASE=cad32;SERVER=10.224.**.**;DRIVER={SQL SERVER }; DSN=" Where: crq_incident_type = the incident type of the call. Incident types are dynamic. MIST has the ability to map any CAD incident type to 1 of 9 MIST incident types. crq date of call = the date and time the call was received with the following format: YYYY-MM-DD HH:MM:SS.SSSS (24 hour format) crq_loc_streetname = the milepost of the call with the following format: T247.2E T = roadway designation: T = mainline; M = Mon Fayette; B = Beaver Falls; S = Southern Beltway; G = AKH / Greensburg by-pass;A = Northeast Extension. 247.2 =actual milepost (even mileposts do not display the ".0") E = direction: N, S, E, W for North, South, East, & West.

2



crq_loc_streetsx = ??? (Doesn't look like it is used – null – but needed for consistency)

crq_loc_community = any text in the "comments" field.

crq_incident_number = the incident number.

crq_loc_lat = milepost latitude.

crq_loc_long = milepost longitude.

[crq_dispatcher_type = '1000'] = this filters out any "Network Control" user group calls and passes all "Radio Operator" user group calls.

Page	Section	Requirements	Comply	Will not Comply	Explanation for Non- Compliance/Alternate Solution
2-1	2.2	There is a limitation on the CADS such that only one user can access an incident record at any time which is unacceptable. The new CADS shall not require such a restriction.			
2-1	2.2	The new CADS shall also have the ability to utilize GPS technologies (for both incident reporting and resource monitoring), communicate with the PSP Mobile Data Terminals (MDT), and archive information for performance review.			
3-1	3.1.1	These requirements shall apply to all of the CADS functions.			
3-1	3.1.1.1	The CADS shall provide two main functions: a) Incident Management Dispatch and b) Network Infrastructure Management			
3-1	3.1.1.1.a	Incident Management Dispatch and Network Infrastructure Management share some common functions, but the specific functions for each shall be provided based on the operator login, i.e., an operator logged in as a Incident Dispatcher shall have access to Incident Dispatcher functions and a user logged as a Network Manager will have access to Network Management functions.			
3-1	3.1.1.2.a	Dispatchers shall log into one or more districts for which they are assigned responsibility.			
3-2	3.1.1.2.b	Dispatchers shall have the ability to change their districts after login.			
3-2	3.1.1.2.c	The number of districts is currently five (5) but shall be expandable by the Commission System Administrator to fifty (50) districts.			
3-2	3.1.1.2.d	This increase shall only require a database configuration change; the CADS shall have the capacity for this expansion without further software, licenses, or hardware.			
3-2	3.1.1.2.e	This increase shall not degrade the required system performance such as processing and query speed.			
3-2	3.1.1.2.f	The CADS shall have the ability to be configured such that dispatchers can only log-in onto the districts that are assigned to them and restrict them to access other districts if so desired by the PTC. This functionality shall just require a configuration change on the CADS'			
		security settings by the System Administrator.			
		The CADS default setting shall provide all dispatchers access to all the districts.			

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				Comply	Compliance/Alternate
0.0	0.4.4.0				Solution
3-2	3.1.1.3	I ne CADS shall allow multiple users to access and update the same			
		incident, without interfering with each other's entries.			
		The system shall include the appropriate safeguards and operator			
		interactions such that data is not lost or corrupted when the same incident is			
		being accessed and updated by multiple operators			
3-2	3.1.1.4	The CADS shall allow operators to combine calls, when it is determined that			
02	0	the calls are for the same incident.			
		When calls are combined, all information from the combined calls shall be			
		retained.			
3-2	3.1.1.5	For entries made in narrative fields, the CADS shall automatically notate the			
		entry with date and time stamp of the entry along with the identification of			
		the operator making the entry.			
		The identification for each operator shall be unique and shall be assigned by			
		the System Administrator.			
		The identification shall be alphanumeric without limit to the number of			
		characters and combination			
		An initial list of operator identification shall be provided to the proposer.			
3-2	3.1.1.6	For screen "windows" which display information in rows and columns, the			
		CADS shall provide the capability to sort on each column or row, by			
		increasing or decreasing alphanumeric values.			
		The CADS shall support the selection of both increasing and decreasing			
2.2	2117	appnanumeric values.			
3-2	5.1.1.7	CADS shall provide the capability to search by type or category where			
1		annronriate			
3-2	3118	The CADS shall provide for instant messaging between the CADS			
02	0.1.1.0	workstations.			
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3-2	3.1.1.8.a	The instant messaging shall enable operators to send broadcast messages to a group of workstations.			
		All messages shall be saved by the system to a period defined by the System Administrator.			
		The CADS' default setting shall be thirty calendar days.			
3-2	3.1.1.8.b	The instant messaging shall allow an operator to send a message to a specific workstation or to multiple identified workstations.			
3-2	3.1.1.9	The CADS internal time-of-day clock shall automatically synchronize to the PTC's computer Local Area Network (LAN) time source.			
3-2	3.1.1.9.a	Automatic synchronization shall be such that the CADS clock shall never deviate from the PTC's computer network time source by more than 2 seconds.			
3-3	3.1.1.10	The CADS shall provide a Web based user interface for viewing and requesting reports.			
3-3	3.1.1.10.a	The Web based interface shall fully support the use of Microsoft Internet Explorer for all functions.			
3-3	3.1.1.11	The CADS shall provide view only capability that shall be accessed from a web browser.			
3-3	3.1.1.11.a	The view only capability shall provide the ability to:			
3-3	3.1.1.11.a.i	view incident details			
3-3		research historical events			
3-3		run reports			
3-3	3.1.1.11.b	The CADS shall allow a properly authorized operator to configure what entries in the incident record are allowed in the view only interface.			
3-3	3.1.1.11.c	The web view only interface shall not allow the user to make any changes to the data.			
3-3	3.1.1.11.d	The web based view only interface shall fully support the use of Microsoft Internet Explorer for all functions.			
3-3	3.1.1.11.e	Use of the web based view only interface shall require the user to login and provide a password			
3-3	3.1.1.11.f	Login names and passwords shall be established and maintained by the System Administrator.			
3-3	3.1.1.12	The CADS shall use Microsoft SQL Server as the database software.			
		No other database software shall be allowed.			
3-3	3.1.1.13	The CADS shall be able to provide a report showing all users currently logged onto the system including all web interfaces.			

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3-3	3.1.1.14	The CADS shall automatically login to the CLEAN database when an operator with the proper security level is logged onto the CADS.			
		This automatic login shall be configured by the System Administrator.			
3-3	3.1.1.15	All user data/transaction including but not limited to data entries, actions, log-in activities, instant messaging transmission, system configuration changes, system updates shall be archived by CADS for a period defined by the System Administrator. The CADS' default setting shall be 30 calendar days.			
3-3	3.1.2.1.1	The CADS client software shall run on existing PTC owned Dell Precision 380 workstations with 3.2 gigahertz Pentium 4 processors, 1 GB RAM, USB Keyboards and mice, with Colorgraphic Xentara GT quad display adapters (capable of supporting up to 4 displays – currently supporting 3 flat panel displays).			
3-4	3.1.2.1.2	The CADS server based software shall run on existing PTC owned HP ProLiant DL380 G4 servers with dual 3.60 gigahertz Intel Xeon processors, 4 GB RAM, with 36.41 GB mirrored drives.			
3-4	3.1.2.1.3	The proposer shall identify if new keyboard/video/mouse devices shall be provided.			
3-4	3.1.2.1.5	The PTC owned network shall be the transport within the primary CADS server facility.			
3-4	3.1.2.1.6	The CADS shall implement server mirroring and automatic switching in the event of failure of the primary server.			
3-4	3.1.2.1.7	The CADS shall ensure that transaction replication is used between the databases on the two CADS servers.			
3-4	3.1.2.1.8	The CADS shall include an automated procedure for replication restoration in the event of failure.			
3-4	3.1.2.1.8.a	No operator (human) intervention shall be required at the servers to accomplish switching between servers in the event of a failure.			
3-4	3.1.2.1.8.b	Data and queued calls shall not be lost and shall be available following the reboot if required.			
3-4	3.1.2.1.8.c	Active calls which are open in the active call window may be interrupted but shall be fully retrievable.			
3-4	3.1.2.1.9	In addition to the dispatch workstations and records management workstations, the proposer shall provide and install administrative software packages on forty-five (45) PTC owned workstations.			
		The CADS supplier shall provide software licenses sufficient for the complete deployment of these 45 workstations.			

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3-4	3.1.2.1.9.a	Most of these work stations shall require the ability to view (only) active calls.			
3-4	3.1.2.1.9.b	A quantity of these, not to exceed fifteen (15), shall also require the functionality to view only the "Network Management" user group's active calls and databases. These shall be connected via the Commission's network at the primary and remote facilities			
3-4	3.1.2.1.9.c	The CADS supplier as part of his price bid shall include as an option to PTC, cost of additional CADS administrative licenses in bundle of 25 licenses.			
3-4	3.1.2.1.10	The CADS supplier shall ensure that the installation of the CADS clients, servers, and browser based applications does not interfere with the existing non CADS software also installed on these machines.			
3-5	3.1.2.1.11	Note: where the PTC is supplying the servers and workstations as outlined above, if the CADS supplier feels that this equipment is inadequate for their system, then the CADS supplier shall identify to the PTC all necessary upgrades and additional hardware and COTS software products necessary to upgrade and/or replace the existing systems.			
3-5	3.1.2.2.1	The following operating systems shall be used:			
3-5	3.1.2.2.1.a	Servers: Windows 2003 server.			
3-5	3.1.2.2.1.b	Workstations: Windows XP Service Pack 2			
3-5	3.1.2.3	The system shall provide a minimum of five (5) access levels.			
		The system shall allow the System Administrator to fully define, configure and modify parameters for all access levels.			
3-5	3.1.2.3.2.a	The levels shall be assigned according to the user ID and password.			
3-5	3.1.2.3.2.b	Each level shall have specific CADS functions available to it.			
3-5	3.1.2.3.2.b.i	System Administrator – shall be able to use all CADS functions and in addition can update database definitions and tables.			
		The System Administrator shall have full capability to define, configure, manage and modify all system settings and parameters.			
3-5	3.1.2.3.2.b.ii	Dispatcher – shall be able to use all CADS functions and are cleared for NCIC and CLEAN access.			
3-5	3.1.2.3.2.b.ii.1	Each dispatcher logs into CADS and selects their geographic specific districts and the user shall have the ability to re-select/change their districts after login.			
Page	Section	Requirements	Comply	Will not Comply	Explanation for Non- Compliance/Alternate Solution
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3-5	3.1.2.3.2.b.iii	Network Management Group – shall be able to access all Network Control Group functions and incidents but are not authorized for NCIC and CLEAN access.			
3-5	3.1.2.3.2.b.iv	Post Incident Process – shall be able to view and generate reports, in addition can add code to existing PSP incident only field.			
3-5	3.1.2.3.2.b.v	View Only – shall be able to only view and generate reports via web interface. Change of any data shall not be permitted.			
3-5	3.1.2.3.3	The CADS shall recognize which dispatcher (2.b.ii above) is logged into each district and distribute incidents to the correct dispatcher based on the district the dispatcher is logged- in and the district in which the incident occurs.			
3-7	3.1.3	The following sections describe the intended scenarios that shall be supported by the new CADS. The CADS shall support these scenarios and the operator interactions necessary to provide the functionality described herein.			
3-7	3.1.3	The need for metrics for the Network Management shall be to recall call totals and totals by incident type.			
3-7	3.1.3.1.1.a	The CADS shall provide the capability for the user to type information directly into the screen fields or in specified instances where drop down selections lists are appropriate, provide menus to enable the operator to select an entry from a list.			
3-7	3.1.3.1.1.b	The CADS shall provide drop down menus in any field where use of such function is appropriate. i.e. incident type.			
3-7	3.1.3.1.1.c	 When a drop down selection list is provided, the user shall be able type keys which shall "jump" the pointer to the entry with that character as the first character in the selection list; if subsequent characters are typed, the CADS shall further refine the entry to match the characters as typed in sequence. However, if the operator pauses longer than a configurable period of time, then the CADS shall accept the next key entry as the first character for an entry in the drop down list. If there is no entry which matches the characters typed, then the list shall 			
		show the last entry which matched a key stroke.			

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3-7	3.1.3.1.2.a	To begin the call information entry process, the CADS operators shall be provided the option to select an icon or to use a single hotkey stroke to call up a caller information entry screen to initiate a new call entry.			
		Both options (Icon and hot key) shall be provided.			
3-8	3.1.3.1.2.b	The operator shall be able to move from each entry box to the next by using the TAB key.			
3-8	3.1.3.1.2.c	The CADS proposer shall provide a call information screen with equivalent or better capabilities in relation to the current system screen (Figure 3 2).			
3-8	3.1.3.1.2.d	The CADS shall provide the ability to enter text into fields to identify the caller as shown below: First Name Last Name (and suffix such as Jr, III) Salutation (eg., Mr., Ms., Mrs.) Address (including 2 lines for the street address and appt.#, city, state, zipcode) Phone Number (and phone type) Alternate phone Number and type Date of Birth			
3-8	3.1.3.1.3.a	The CADS shall provide the ability to enter text into fields identifying the incident locations; these fields shall include the following as a minimum: Address Location / milepost (auto populated when dispatcher locates incident) Cross Streets Lane – the PTC shall provide the lane assignment to the CADS proposer Latitude/Longitude The system shall automatically populate the Latitude/Longitude field when the entry of a milepost is complete and vise versa (i.e.			
3-8	3.1.3.1.3.b	Incident type shall be assignable by drop down menu.			
3-8	3.1.3.1.3.b.i	It shall be possible for the System Administrator to modify (add and/or delete) the drop down menus for incident type.			
3-8	3.1.3.1.3.c	The incident location "location field" entry shall consist of: a letter / a milepost number / a letter as follows:			

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3-8, 3-9	3.1.3.1.3.c.i	The first letter is to identify turnpike roadways. The number of roadways (hence letters) shall be expandable to 26.			
		The capability shall be provided for the System Administrator to define and add, additional letters.			
		The currently defined first letters are defined below:			
		 T – Any incident on the Mainline A – Any incident of the Northeast Extension B – Any incident on the Beaver Valley Expressway G – Any incident on the Amos K. Hutchinson Bypass M – Any incident on the Mon-Fayette Expressway S – Southern Beltway 			
3-9	3.1.3.1.3.c.ii	The milepost number shall be the nearest milepost on the road where the incident occurred.			
3-9	3.1.3.1.3.c.iii	The second letter shall be as defined below: N – North S – South E – East W – West			
3-10	3.1.3.2.1	The system shall allow separate tracking, reporting and access based upon user ID for at least sixteen (16) different user groups.			
3-10	3.1.3.2.1.a	The new CADS shall have a minimum of 124 editable incident types and shall be assignable to one or more user groups. The CADS shall provide the System Administrator the ability to add and/or delate incident types			
3-10	3.1.3.2.2	The CADS shall provide an incident type drop down list.			
3-10	3.1.3.2.2.a	The CADS shall provide a list of all dispatch incident types to dispatchers and a list of all Network Control incidents to Network Control users.			
3-10	3.1.3.2.2.b	Clicking on the desired incident type shall enter it into the incident type field on the call screen.			
3-10	3.1.3.2.3	The CADS shall provide the ability to change the incident type.			
3-10	3.1.3.2.4	A record of all incident types assigned to a given incident shall be maintained.			
3-10	3.1.3.2.5	The CADS shall provide a common place feature for the incident location.			

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3-10	3.1.3.2.5.a	The common place menu shall provide an entry window to type the location desired.			
3-10	3.1.3.2.5.b	A drop down menu shall be provided containing the locations matching the text entered into the entry window.			
3-10	3.1.3.2.5.c	The operator shall be able to select the desired name from the common place menu by double clicking the entry.			
3-10	3.1.3.2.5.d	The common place feature shall enter the incident location field in the active call box.			
3-10	3.1.3.2.6	The CADS shall provide the capability to combine duplicate incidents .			
		In the case where more than one call comes in for the same incident, when it is recognized the incidents can be combined, the CADS shall allow the combining of the information retaining all differing information from the different call ins.			
3-10	3.1.3.2.7	When all pertinent data has been entered, the user shall have the ability to press a hotkey or icon (both shall be supported) to release the call to the queue.			
3-10	3.1.3.2.7.a	When the dispatcher/call taker has moved the incident into the incident queue, the incident shall be passed to the dispatcher working the district where the incident occurred (for dispatchers).			
3-10	3.1.3.2.7.b	Network Control users work the incident without passing to another user.			
3-10	3.1.3.2.8	Placing the incident in the incident queue shall be accomplished by the dispatcher selecting an icon on the screen or by using a hotkey (both shall be supported).			
3-10	3.1.3.2.8.a	When the incident is placed in the queue, the CADS shall automatically initialize a timer, based on incident type, that provides a visual alert and an audible alert when an acceptable time to dispatch the incident has expired.			
3-11	3.1.3.2.8.b	The CADS shall provide the ability for the operator to override the timer.			
3-11	3.1.3.2.8.c	The time-out for the timers shall be adjustable by the System Administrator (for dispatchers).			
3-11	3.1.3.2.8.d	Network Control does not require timers.			
3-11	3.1.3.2.9	It is possible the dispatcher taking the call will be the dispatcher to work the call. In this case the CAD system shall enable the dispatcher to continue working the incident with no interruption.			
L		This shall always be the case for Network Control users.			
3-11	3.1.3.2.10	When the incident field has been populated, the CADS shall display the nearest access gate/s with mile marker on both sides of the incident.			

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3-11	3.1.3.2.11	The CAD shall provide a comments field.			
3-11	3.1.3.2.11.a	Operators shall be able to enter text messages about the incident in the comment field.			
3-11	3.1.3.2.11.b	Entries in the comment field shall automatically be appended with the date / time and the operator identification that entered the comment.			
3-11	3.1.3.2.12	The incident priority is set by the system based on incident type. The CADS shall provide the capability for the System Administrator to update the incident priorities to include adding new priorities and modifying the mapping between incidents and priorities.			
3-11	3.1.3.2.13	End Disposition shall be updateable by the System Administrator. The currently used End Dispositions are: a. Call Cancelled b. Call Completed c. Duplicate Call d. Gone On Arrival e. Own Service Obtained f. Serviced On The Scene g. Test h. Towed From Scene			
3-11	3.1.3.2.14	Previous Call Information provides information for the previous four (4) calls related to the milepost where the incident is located.			
3-11	3.1.3.2.15	Pre-plan info cards per location i.e. Buildings, Bridges, Gates, Tunnels. Database for the Pre-plan info cards will be generated by the PTC The CADS proposer shall identify to the PTC the database format for the proposed CADS. The CADS proposer shall provide all the required interface to provide this functionality.			
3-12	3.1.4.1	The CADS shall provide tables that contain available resources based on geographic location.			
3-12	3.1.4.2	The CADS shall allow editing of the available resources based on the proper access level.			
3-12	3.1.4.2.a	These edit operations shall be possible to be carried out from any available workstation by any system user with proper access level.			
3-12	3.1.4.3	The ability to edit a range of records simultaneously shall be required.			

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3-12	3.1.4.4	The system is milepost driven. The PTC needs the ability to make one change (based on a milepost range) and have the system automatically repopulate the affected responses within the specified Emergency Service Number (ESN) box range. Having to manually edit each response in each of the affected ESN boxes is unacceptable. As an example, the system administrator shall select a milepost range and simultaneously update the information for the tow truck operator that is common to that milepost range without having to go through the different records and enter the same information multiple times.			
3-12	3.1.4.5	The CADS shall provide a user interface that permits modifying the zone boundaries and resource assignments for each zone by the System Administrators.			
3-12	3.1.4.6	The CADS shall allow a maximum of 25 unique responders to be assigned to each emergency service zone.			
3-12	3.1.4.7	This ESN database shall have the capacity to hold a minimum of 50,000 ESN's.			
3-12	3.1.4.8	The CADS shall have the ability to support in the future the tracking of each PSP Troop T vehicle's location and status / availability via an interface to the vehicle mobile data unit (MDU) server.			
3-12	3.1.4.9	The CADS shall display an "Available Resources" menu for each incident.			
3-12	3.1.4.9.a	The contents of the Available Resources menu shall vary as follows.			
3-12	3.1.4.9.a.i	Prior to display, the CADS shall populate with the resources assigned to the emergency service zone containing the incident location.			
3-12	3.1.4.9.a.ii	All resources that are not marked as IN SERVICE shall be removed from the list.			
3-12	3.1.4.9.a.iii	The three closest PSP Troop T vehicles shall be added to the list.			
3-12	3.1.4.9.a.iv	The list shall be displayed in the "Available Resources" menu for the incident.			
3-12	3.1.4.9.a.v	Each time the list is displayed, the CADS shall update the list in this manner.			
3-13	3.1.4.10	The CADS shall display all resources and the current status of each shall be displayed in a "Resource Status" menu.			
3-13	3.1.4.10.a	When an incident is identified and located, the CADS resource location service shall identify the:			
3-13	3.1.4.10.a.i	Tow truck company that services that location and the contact information for that tow truck company.			
3-13	3.1.4.10.a.ii	Fire Department that serves that location and their contact information.			

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3-13	3.1.4.10.a.iii	Emergency medical services that serve that location and their contact information.			
3-13	3.1.4.10.a.iv	The specific PTC personnel, maintenance facilities and vehicles, PSP Troop T vehicle and officer that are the nearest to the incident.			
3-13	3.1.4.11	A list of current CADS unit status codes that shall be definable and changeable by the System Administrator:			
3-13	3.1.4.11	ALAvailable at LocationAPAvailable by PagerARAvailable by RadioASAvailable at Station/HQAVAvailable for CallCZConstruction ZoneDSDispatchedEHEn-route to HospitalEJEn-route to Justice/CourtEPTraffic Flow RestoredEREn-route to SceneESEn-route to Station/HQNANot Available for CallNRNo Response (Fire/EMS)OBOn BreakODOff DutyOHOn Scene at HospitalOJOn Scene at Justice/CourtOPRoadway Lane(s) OpenOSOn the Scene/LocationSDSpecial DetailRPRoutine Roadway PatrolRTNon-Emergency TransportTSOut of ServiceUSUnavailable at Station			

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3-14	3.1.4.1.1	The CADS resource location service shall be activated at the operator's option via an icon on the screen or a hotkey (both shall be supported).			
3-14	3.1.4.1.2	The Available Resource menu shall only show the applicable resources for the specific location of the incident.			
3-15	3.1.4.1.3	When the mouse is clicked on a resource, the contact information for that resource shall be shown.			
3-15	3.1.4.1.4	When the dispatch has been completed the operator will double click on the resource dispatched.			
3-15	3.1.4.1.4.a	This information shall be entered into the incident tracking record for each resource dispatched noting the time and operator performing the dispatch operation.			
3-15	3.1.4.1.5	As a future functionality, the CAD system shall be capable of sending a dispatch message to PSP Troop T vehicles by sending the message to the MDU server and the MDU server will forward the message to the vehicle.			
3-15	3.1.4.1.5.a	It shall also display the confirmation from the vehicle that the dispatch was received and the resource is responding.			
3-15	3.1.4.1.6	When the dispatch operations have been completed, the CADS shall provide the capability to insert the dispatched unit information into the incident tracking screen.			
3-15	3.1.4.1.6.a	This shall be accomplished at the operator's option either via an icon or a hotkey (both shall be supported).			
3-15	3.1.4.1.7	All phases of incident response shall be tracked by timers. The times described below shall be captured in the incident tracking record and shall be accurate to one second for each "event". Times shall be based on the PTC's time reference as described elsewhere in these requirements.			
3-15	3.1.4.1.7.a	Times shall be captured for the following phases of the life cycle of an incident:			
3-15	3.1.4.1.7.a.i	Call entered to Dispatch			
3-15	3.1.4.1.7.a.ii	Dispatch En-Route			
3-15	3.1.4.1.7.a.iii	En-Route to On Scene			
3-15	3.1.4.1.7.a.iv	On Scene to Clear			
3-15	3.1.4.1.7.a.v	Note that where multiple resources are dispatched to "service" the incident, the times for each resource shall be tracked separately.			
3-15	3.1.4.1.7.b	The timers shall be used for both the dispatcher's incident management and for metrics. These timers shall start and end automatically.			

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3-15	3.1.4.1.7.c	The CADS shall provide the ability for the operator to override the timer. However, this operation shall be logged with the event tracking which shall note the name of the operator and the original value.			
3-15	3.1.4.1.7.d	The CADS shall also set visual and audible alarms with predetermined values to remind the operator if a response is taking longer than planned.			
3-15	3.1.4.1.7.e	The timer values shall be selectable by the System Administrator. Note that it shall not be necessary to re-boot or re-initialize the system for the new timer values to take place; the new timers shall take effect with the next event or sub-event as the incident is being tracked / dispatched.			
3-15	3.1.4.1.8	For Network Control users, the timers are used to track the length of time an incident response takes. Visual and audible alarms are not needed.			
3-16	3.1.5.1	The CADS shall provide an incident tracking screen that contains all of the pertinent information required by the operator for tracking incident status.			
3-16	3.1.5.1.a	The screen shall contain the current status on all active incidents;			
3-16	3.1.5.1.b	The screen shall provide the capability for a PTC System Administrator to add or delete fields and to change titles for all entries on the screen.			
3-16	3.1.5.2	The incident tracking screen shall, as a minimum, display the following: a. ID (the user identification of the last user to access the incident) b. Township, County (the Township and County where the incident is located) c. Incident # d. Incident type e. Priority f. Additional incident information (text field) g. Location h. Time i. D (an 'X' in this column indicates that units have been dispatched) j. Units (refer to related requirements) k. Primary Dispatch I. Pending Units			
3-17	3.1.5.3	Calls in the tracking screen shall be colored coded by CADS to enable the users to identify when a call needs attention. The color coding shall be editable by the System Administrator.			
		The color scheme shall include the following minimum colors which are supported by the existing CADS.			

Page	Section	Requirements	Comply	Will not	Explanation for Non-
				Comply	Solution
3-17	3.1.5.3	The current coloring coding scheme is: Gray – Normal color for a queued call White – incident is accessed and is being viewed by a CADS user Light Blue – Call Box (Not dispatched or cleared) Yellow – (Alert) CADS record queued without a proper unit assigned. A proper unit is defined as the appropriate responder for the incident. As an example, a tow truck operator is a proper unit for a disabled vehicle and an ambulance is not a proper unit. Red – (Alarm) CADS record queued without a proper unit assigned. An audible alarm will sound after the incident timer lapsed. After two minutes a second audible alarm will sound. The CADS shall allow the System Administrator to disable the first audible alarm			
		The CADS shall allow the System Administrator to set different sounds for both audible alarms (as an example, the first audible alarm is a chirp while the second one is a high pitch tone).			
		record associated with each audible alarm.			
3-17	3.1.5.4	The Tracking Incident screen shall be user definable and displayed based on window columns.			
3-17	3.1.5.5	The calls shall be displayed in order based on incident type or priority, and displayed by color.			
3-17	3.1.5.6	The user shall be able to configure the order in which incidents are displayed based on his / her needs.			
		The CADS shall have the ability to configure the order in which the incidents are displayed based on the Dispatcher needs.			
		It shall be preset as part of the user profile or can be re-aligned through clicking on a column.			

Page	Section	Requirements	Comply	Will not Comply	Explanation for Non- Compliance/Alternate Solution
3-17	3.1.5.7	Once an initial incident has been created,			
		an accident with blockage, a single hot key selection shall activate associated incident(s).			
		The resulting incident would automatically be populated with location caller info etc.			
		The CADS shall allow the operator to copy information from the initial record created for the accident and copy the information to the new record for the lane closure.			
		The CADS shall automatically link the former record with the latter.			
3-17	3.1.6.1	The CADS map shall be based on the PTC's Geographic Information System (GIS) map.			
		As part of this project, the CADS shall interface with the existing PTC map by displaying all the required graphical information such as incident icons and Emergency Service Number (ESN) as described below:			
3-18	3.1.6.1.a	The proposer shall include all turnpike specific devices and locations on the map.			
3-18	3.1.6.1.b	Currently an ESN includes several mileposts, but, in a new scheme that the CADS proposer shall develop as part of the new CADS shall be defined sequentially in 1/10 th of a mile increments matching each 1/10 th milepost along the turnpike to more accurately identify the incident location.			
		the initial database.			
3-18	3.1.7.1	The CAD system shall provide the user with the capability to identify the desired user configuration and save each user's configuration.			
3-18	3.1.7.1.a	When a user logs in, the CAD system shall initialize the CADS with the user's specific configuration.			
3-18	3.1.7.1.b	The configuration shall be updatable by the user to support current work efforts.			
3-19	3.1.7.1.c	Each Dispatch user shall be able to select one or multiple districts to work for each shift and can update the districts during the work shift, aforementioned in section 3.1.2-8b.			

Page	Section	Requirements	Comply	Will not Comply	Explanation for Non- Compliance/Alternate Solution
3-19	3.1.7.2	The Common place database currently contains nearly 1200 records and shall be expandable to accept additional common places for existing and new turnpike sections.			
3-19	3.1.7.2.1	The Common place Database shall be searchable by common place name and alias.			
3-19	3.1.7.2.2	The search shall return the common place name, the nearest milepost and the related latitude and longitude for the common place name searched for.			
3-19	3.1.7.2.3	The common place database shall initially be loaded with the existing common places and it shall be updatable by the System Administrator.			
3-19	3.1.7.2.4	The Common place Database shall be expandable to a minimum of 20,000 records by the System Administrator through the normal System Administrator's user interface.			
3-19	3.1.7.3	The Rolodex Database currently contains over 2000 records and shall be expandable to accept additional records.			
3-19	3.1.7.3.1	The Rolodex Database shall be searchable by name and type.			
3-19	3.1.7.3.2	The search shall return the name, phone number, and address for the name searched for.			
3-19	3.1.7.3.3	The Rolodex database shall initially be loaded with the existing contact nformation and it shall be maintainable by the System Administrator.			
3-19	3.1.7.3.4	The Rolodex Database shall be expandable to a minimum of 20,000 records.			
3-19	3.1.7.3.5	An additional field on the Rolodex is required to allow for network control and dispatchers to virtually have their own databases.			
		Different users shall be able to filter the main rolodex to create a customized rolodex.			
		The creation of customized rolodex shall not affect the main rolodex database.			
		The CADS shall have the ability to support the creation of unlimited customized rolodex.			
3-19	3.1.7.3.6	The CADS shall allow users to print individual, selected (either by manual selection of sorting) or the entire rolodex.			
		The print format shall be user definable.			
		As an example, the user shall be able to print individual entries as separate "cards" or print a selected entries or the entire rolodex in tabular format.			

Page	Section	Requirements	Comply	Will not Comply	Explanation for Non- Compliance/Alternate Solution
3-20	3.1.7.4.1	The CADS shall provide incident data in a database compatible with Crystal reports.			
3-20	3.1.7.4.2	System Administrators shall be trained on the database to allow them to recreate existing reports			
3-20	3.1.7.4.3	The ability to create a report based on any data field shall be feasible.			
3-20	3.1.7.4.4	The canned reports using a drop down menu shall include the following: a. Dispatcher			
		i. Dispatcher Log by Dispatcher Name			
		b. Incidents			
		i. Incidents by Number			
		ii. Incidents by Type			
		iii. Incidents by Agency			
		iv. Incidents by Report Number (T-number)			
		v. Append by Number			
		vi. Incidents by Disposition			
		vii. Incidents by Origination Type			
		viii. Incidents by Address			
		c. Message Log			
		i. Message Log by User			
		ii. Message Log by Unit			
		d. Unit Reports			
		i. Unit Log			
		ii. Unit Status Report			
		e. Vehicle Stops			
		i. Vehicle Stops by Unit			
		ii. Vehicle Stops by Agency			
		f. Unverified Addresses			
		g. Recall List			

Page	Section	Requirements	Comply	Will not Comply	Explanation for Non- Compliance/Alternate
3-20, 3-21	3.1.7.4.5	Reports Created in Crystal Reports (outside of CADS):			Solution
5-21		a. PSP Reports			
		i. All reclassified Incidents - Station and Code			
		ii. History vs. RMS			
		iii. Incidents by Station and Code(all)			
		iv. Incidents by Station and Code			
		v. Not in RMS3			
		vi. Not in RMS Report Numbers			
		vii. (21 Overtime Reports - not included as SAP/PRIDE will do this)			
		viii. Pending RMS			
		ix. PSP Report Number by Date			
		x. PSP Report Number			
		xi. Reclassification Report			
		xii. RMS Pending			
		xiii. Station Incident Total (all)			
		xiv. Station Incident Total			
		xv. Summary Incidents by Station			
		xvi. Summary Incidents by Station_2007			
		xvii. Total Incidents			
		xviii. Unit History			
3-21	3.1.7.4.6	Call Box Reports selectable by pull-down menu:			
		i. Monthly Call Box Report by day			
		ii. Monthly Call Box Report by Location (milepos	st)		
		iii. Yearly Call Box Report by Location (milepost)		

Page	Section	Requirements	Comply	Will not Comply	Explanation for Non- Compliance/Alternate Solution
3-21	3.1.7.4.7	Other Reports selectable by pull-down menu:			
		i. Monthly Incident Type counts (dispatched			
		ii. Accident Counts by date range and location range			
		iii. Monthly First Responder call (by unit)			
		iv. Outstanding Radio Tech Calls (Network Contro (daily)	1		
		v. ALI (Automatic Location Identifier) Editor Database			
		vi. Common Place			
		vii. Rolodex			
		viii. ESN Report			
		ix. Response Box Report			
		x. Various System Maintenance Reports based on incident type and unit assigned (Network Control)			
		xi. Track all incidents in relation to original inciden number	t		
3-21	3.1.7.5.1	The CADS shall have the ability (System Administrator definable) to automatically assign a T-number based upon the resource unit (trooper or car) assigned to the call, the incident type of the call, and the location of the call. If multiple resources are assigned to the same call, both resources receive the same T-number.			
3-21	3.1.7.5.2	The T-Number shall be in the following format: "T" followed by a two digit			
		code followed by a sequential 7 digit number.			
		The CADS shall have the ability to assign report number prefixes and a "starting" point for the sequential 7 digit number to each agency.			
3-22	3.1.7.5.3	The CADS shall allow an operator to manually assign other station numbers to units for "assist other PD" calls			
3-22	3.1.7.6.1	The CADS shall allow a user (based on permissions) to search for a			
		previous incident (event) number by unit, agency, location, incident type, date, "T-number" or any combination thereof.			

Page	Section	Requirements	Comply	Will not Comply	Explanation for Non- Compliance/Alternate Solution
3-22	3.1.7.6.2	Once the previous incident (event) number is found, the CADS shall provide a user interface that allows the user to add or edit a four digit reclassification code.			
3-22	3.1.7.6.3	The CADS shall also provide user definable reports based on these four digit reclassification codes. The reports may include (as selected by the user) but are not limited to the following data fields: incident (event) number, T-Number, date range, 4 digit reclassification code, agency, counts and totals of those data fields, or any combination thereof.			
3-22	3.1.8	There is a need to collect metrics throughout the incident process to determine how effectively the incidents are managed. The information needs to be collected accurately and stored in an updatable manner. During the process of entering the incident information, the incident is classified and assigned to responders. The CADS needs to support these reporting activities.			
3-22	3.2.1	The user interface shall support:			
3-22	3.2.1.1	Multi-level user login (same as security levels). The login levels shall include:			
3-22	3.2.1.1.a	System Administrator – shall have the ability to use all CADS functions and in addition to update database definitions, tables, and configuration data such as timers.			
3-22	3.2.1.1.b	Dispatcher – shall have the ability to use all CADS functions for incident tracking and management (Not network events)			
3-22	3.2.1.1.c	Network Control Group – shall have the ability to access all Network Control Group functions and have the ability to perform all Network Management operations			
3-22	3.2.1.1.d	Post Incident Process – shall have the ability to view and generate reports, in addition can add code to existing PSP incident field only			
3-22	3.2.1.1.e	View Only – shall have the ability to only view and generate reports via web interface.			
3-22	3.2.1.2	User definition of initial screens and user defined functions. Store user specifically defined login.			
3-23	3.2.1.3	Enable a user to login to one or more districts and change (add or remove districts from his/her responsibility) as needed without logging out.			
3-23	3.2.1.4	Enable user to select on which display to place the various screens e.g., call information screen, incident tracking screen, map, etc.			
3-23	3.2.1.5	Support the use of all data entry and functions identified in this document.			
3-23	3.2.1.6	ID County – enables user to identify the county and township where a specific incident occurred			

Page	Section	Requirements	Comply	Will not Comply	Explanation for Non- Compliance/Alternate Solution
3-23	3.2.1.7	Each of the screens shall be assignable to any of four hardware displays.			
3-25	3.2.2	The CADS shall have the ability to fully interface with BioKey's MDU system. The CADS system shall provide all information in the MDU's required format.			
3-25	3.2.3	The CADS proposer shall support the PTC in defining interfaces to other agency vehicle location systems that are operated in support of the turnpike.			
3-25	3.2.4	The CADS shall fully support the interface to the Vision 21 Call Box System as described in Attachment A.			
3-25	3.2.5	The CADS proposer shall provide information on the interfaces and data format that would allow the PTC to integrate Remedy into the new CADS in the future.			
3-25	3.2.6	The CADS shall provide an interface to the Post Incident Processing function for authorized users via both CADS workstations and PTC PCs via a web based interface.			
3-25 3-26	3.2.7	The fire and EMS interface shall be accomplished through the use of the available resource screen.			
		location.			
		The screen shall provide the contact information for the Fire and EMS based on the incident location.			
		Note that the user interface shall be such that the incident location and other information is shown simultaneously with the resource screen to allow the dispatcher to read the information to the service provider.			
		Double clicking on the entry shall also automatically enter the dispatch function information into the incident record along with the date/time of the dispatch operation.			

Page	Section	Requirements	Comply	Will not Comply	Explanation for Non- Compliance/Alternate Solution
3-26	3.2.8	The wrecker service interface shall be accomplished in the same manner as the Fire and EMS through the available resource screen.			
		The CADS shall display this screen for the dispatcher based on the incident location.			
		The screen shall provide the contact information for the wrecker service based on the incident location.			
		Note that the user interface shall be such that the incident location and other information is shown simultaneously with the resource screen to allow the dispatcher to read the information to the service provider.			
		Double clicking on the entry shall also automatically enter the dispatch function information into the incident record along with the date/time of the dispatch operation.			
3-26	3.2.9	The CADS shall fully support the interface to the MIST system as described in Attachment B.			
3-26	3.2.10	The CADS shall provide a link to an electronic version of the PTC's Emergency Response Manual.			
	3.2.10	The HAZMAT Emergency Response Manual shall automatically open in an independent window and shall be fully searchable, printable, etc.			
		depending on the interface provided for this manual; such interface is provided by others but shall be invoked by the CADS.			
		Closing this application shall have no effect on the CADS operation.			
3-26	3.2.11	The CADS shall provide access (only for users with proper authorization) to			
		the Commonwealth Law Enforcement Assistance Network (CLEAN) and the			
		Access must be assignable.			
		The CADS shall accept the information returned from the CLEAN / NCIC search and insert it into the incident information log.			

Page	Section	Requirements	Comply	Will not Comply	Explanation for Non- Compliance/Alternate Solution
3-26	3.2.12	The CADS shall integrate a Telecommunications Device for the Deaf (TDD) at every workstation.			
		The proposer shall propose their recommended solution.			
4-1	4	The CADS Proposer shall schedule design review meetings to be held at the PTC Headquarters.			
4-1	4	The CADS Proposer shall step the PTC through all the functionalities and GUI of the proposed CADS.			
4-1	4	There shall be three design review meetings.			
4-1	4	This shall be the initial design review meeting where the CADS Proposer shall present the proposed CADS including the complete GUI design to the Engineer prior to it being submitted and approved as part of the submittal process.			
4-1	4	The CADS Proposer shall incorporate all comments prior to the second design review meeting.			
4-1	4	The CADS Proposer shall present the revised GUI design to PTC for further review and comments.			
4-1	4	The CADS Proposer shall incorporate all comments prior to the final design review meeting.			
4-1	4	After comments from DRM 2 have been incorporated, the CADS Proposer shall present the final CADS.			
4-1	4	The CADS Proposer shall address all the comments within 30 days after comments have been received from PTC for each design review meeting.			
4-1	4	The CADS Proposer shall provide all materials necessary for the design review meeting including handouts, projectors and any presentation materials.			
4-1	4	The CADS Proposer shall also provide five soft copies in CD of all the CADS GUI or screen shots.			
5-1	5	The following tests shall be performed for the CADS:			
5-1	5	The CADS Proposer shall be responsible for developing detailed test procedures for each type of equipment and for conducting the specified test to verify satisfactory operation of that piece of equipment.			
5-1	5	The test procedures shall be complete including the sequence of conducting the tests, the pass/fail criteria, drawings showing the test set-up, required configuration settings for the piece of equipment under test and the test equipment, and procedures for making the test measurements.			
5-1	5	Data sheets shall be provided listing the test step, expected result, verification criteria and space to record the actual result and the make, model number and serial number of all test equipment used.			

Page	Section	Requirements	Comply	Will not Comply	Explanation for Non- Compliance/Alternate Solution
5-1	5	Six (6) copies of the proposed test procedures and data forms shall be submitted to the PTC for approval prior to the tests.			
5-1	5	A minimum of ten (10) working days shall be allowed for the PTC's review and approval of the test procedures.			
5-1	5	Prior to scheduling the test, the CADS Proposer shall conduct a dry run of the test using the approved test procedure.			
5-1	5	Any changes required to the approved test procedure as a result of the dry run shall be noted in this submittal.			
5-1	5	The actual test shall not be scheduled until the test procedure has been approved and the dry-run test has been conducted and the dry-run test data sheets submitted.			
5-1	5	The CADS Proposer shall furnish copies of data forms containing all of the data taken, as well as quantitative results for the test.			
5-1	5	Ten (10) copies of the data forms, including the original test data sheet, shall be sent to the PTC with one (1) form furnished to the PTC or his representative when either the PTC or his representative is present at the time of testing.			
5-1	5	The results of each test shall be compared with the requirements specified herein.			
5-1	5	The PTC shall also witness all retest.			
5-2	5	In the event of such a failure, the test shall be stopped until the failed piece of equipment or software is repaired by the responsible party.			
5-2	5	The CADS Proposer shall conduct SAT for the CADS.			
5-2	5	Satisfactory completion of the System Acceptance Test shall be the basis for system acceptance.			
5-2	5	The System Acceptance Test shall, as a minimum, exercise all functional operations of the CADS.			
5-2	5	In the event of a failure of the CADS, the sixty (30)-day clock shall stop.			
5-2	5	The System Acceptance Test shall then start from the beginning.			
5-2	5	If the CADS or a piece of related equipment has been modified as a result of a System Acceptance Test failure, a report shall be prepared and delivered to the PTC prior to retesting.			
6-1	6	The following documentation shall be provided:			
6-1	6	Functional Control Document: The CADS Proposer shall submit to the PTC for approval a document fully describing how all of the CADS functions described in the contract documents shall be implemented.			
6-1	6	Ten (10) copies of the document shall be submitted to the PTC for approval.			
6-1	6	The PTC shall have thirty (30) days to review the document			

Page	Section	Requirements	Comply	Will not Comply	Explanation for Non- Compliance/Alternate Solution
6-1	6	GUI Interface Document: The CADS Proposer shall submit to the PTC for			
		screens and a description of the control and monitoring features.			
6-1	6	This manual shall also include a description of the API.			
6-1	6	The staging test shall not be scheduled until the document has been approved by the PTC.			
6-1	6	Equipment Manual: If new equipment that is not provided by the PTC is provided, the equipment manuals shall contain the following:			
6-1	6	Maintenance Manual: The maintenance manuals shall contain maintenance and troubleshooting charts and procedures to permit fault isolation to the lowest replaceable unit level.			
6-1	6	Operations Manual: The operations manual shall include complete procedures for the set-up and use of CADS and its related equipment.			
6-1	6	Software Manual: The software manual shall contain the following:			
6-1	6	This shall include configuration information, make file description, code management documentation, and instructions in how to setup and install all software on a machine with an empty, formatted hard drive.			
6-1	6	All source code shall include in-line comments and documentation in the header files to identify the function being performed, variables, and algorithms, control strategies, errors, etc.			
6-1	6	All error codes shall be clearly documented in a single manual for easy reference.			
6-2	6	The State shall have the unrestricted right to use this documentation for its system development.			
6-2	6	The software documentation shall be submitted to the PTC for review and approval.			
6-2	6	The final acceptance for the components and system delivered shall not occur until the software documentation has been reviewed, approved, and accepted by the PTC.			
6-2	6	The CADS Proposer shall submit to the PTC six (6) copies for review and approval prior to the final submission.			
6-2	6	The final copy shall be submitted within thirty (30) calendar days of receipt of review comments from the PTC.			

Addendum No. 1 RFP 08-10350-3631 Computer Aided Dispatch System (CADS)

Following are the answers to questions submitted in response to the above referenced RFP up to and including questions submitted during the Pre-Proposal Conference on July 21, 2008. All of the questions have been listed verbatim, as received by the Pennsylvania Turnpike Commission.

1. Duty Officer Is this a full dispatch position / network/ or administrative position

This is a full dispatch & system administrative position.

2. Radio Shop CAD position Is this a full dispatch position / network/ or administrative position

Presently a full dispatch position, but used as view only.

3. Spares I am assuming they are full dispatch positions

Correct. However the single monitor workstation spare will conform to workstations referenced in question 6.

4. I see no training or test positions since we have both a training system and separate test system.

Presently, new dispatchers are trained along side experienced dispatchers. However, the future we envision a training room.

Our development CAD system serves as our test system.

5. Are all ERO positions full dispatcher. Is there an administrative position called for there Yes. ERO houses our King of Prussia (KOP) PSP station. Those machines will require the ability to perform PSP related admin tasks. (IE: adding a PSP reclassification code.)

6. The remote 8 positions. They seem administrative but can you validate they are not dispatching positions

At present they are full dispatch positions, but are used as view only workstations. The intent is to have them as view only with reporting, search and PSP incident reclassification capabilities (Post Incident Processing).

7. Where are the 45 adm positions? Are they all in the same or multiple locations? If remote sites what connectivity exists between these sites

These positions are spread out throughout the state. These stations utilize the current "web-view" functionality through Internet explorer. They are used mainly for reporting functions. They are all connected via the Commission's private wide area network (WAN). Average WAN throughput to these remote locations is 512K or higher.

8. Can you briefly explain the future role of TransCore in the project? Will they be evaluating and scoring responses, conducting demonstrations, etc?

TransCore was tasked with helping us write the RFP. It is possible that they may assist in evaluating responses, but the final decision will be made by the Commission. Demos will be scheduled after the proposals are reviewed.

9. The RFP refers in several places to RMS and we assume you mean Records Management System.

Correct. PSP uses it to add their re-classification codes.

Currently each remote PSP station has a CAD workstation with the Orbacom RMS software package. (This includes ERO – which has 4 CAD workstations and serves as our "back-up" TOC)

10. Also we are still somewhat puzzled by figure 3-1 and the accurate count for the number of dispatcher, administrative, and remote (web browser) positions needed.

Figure 3-1 outlines the current system. (Web browser positions are not shown. The current system has an unlimited number of web browser clients)

11. IS THE TURNPIKE OPEN TO NEW AND INNOVATIVE WAYS TO ACCOMPLISH TASKS< OR IS A CUSTOM TRANSPORTATION CAD WHAT YOU SEEK WITH THIS RFP?

Yes, we are open to innovations. The Commission is seeking an "off the shelf" CAD system with minor custom "interface" work (Vision 21 call Box and MIST).

12. HAVE YOU PRESELECTED A TRANSPORTATION CAD?

No.

13. Will we be penalized for a different and perhaps non traditional but fully proven approach to your RFP requirements?

Please reference Part II Information Required From Proposers, specifically II-3 Work Plan. Proposers must respond to all requirements of the RFP to be considered.

14. RMS.... The Orbacom RMS we assume is the PSP RMS system referred to. We further assume that you are asking for a closed record download to dump data from our CAD into their RMS system based on selected event types that would be appropriate for incident/arrest/field contact reporting to the FBI. This is a typical data flow that we see every day although we see almost no Orbacom systems still installed.

That is correct. PSP RMS is the Orbacom RMS package (a VERY early version). In our version of the Orbacom system, there is only one database. The RMS software pulls data from the CAD tables and populates the RMS tables in the same database. We are looking to the proposers for guidance on RMS.

I would not be surprised if we are the last surviving Orbacom installation...

15. Additionally, there seems to be some reference to CADS being responsible for RMS reports. This is a puzzle because these reports would typically be pulled directly from RMS by personnel trained on the RMS system. If you are speaking for instance of a report that details monthly calls by event type, then this is clearly a CAD function. Please clarify.

Most of our current reporting is done via Crystal Reports outside of the system software. Again, we will look to the proposers for report options.

16. Which CAD Vendor are you using now and which vendor did you have previously?"

Orbacom Genisis CAD along with the GenNET web-view application is our current CAD system and has been in place since 1999.

The previous CAD system was a custom application that ran on the old mainframe. (I don't know who the vendor was.)

17. Might it be possible to do a walk through of your Call Center possibly as soon as next week??"

Tours will be conducted after the pre-proposal conference on Monday July 21. In the meantime please reference the "Existing PTC CADS Flow" diagram on page 2-2 and the "Existing PTC CAD Network" drawing on page 3-6 of the functional requirements portion of the RFP.

18. How many full function CAD workstations are required? p. 3-3 (We price by total installed machines.)

25 to 50.

19. Do the 8 remote sites need full CAD functionality? (see question #6)

At present they are full dispatch positions, but are used as view only workstations. The intent is to have them as view only with reporting and PSP incident reclassification capabilities (Post Incident Processing).

20. How many full CAD workstations are required?

See question 18.

21. How many "view only" CAD workstations?

Our current web-view is unlimited.

22. What is the total number of Admin (full CAD/reports and database update) positions required?

5 Administrative workstations (database & system update). Full dispatch positions: 25-50. The current web view is unlimited. 15 Post Incident Processing workstations. Some workstations may have multiple rolls.

23. There is mention of RMS workstations, please define the expectation of the proposer with regard to software to be provided for these workstations, as well as the number of workstations.

PSP has a need to add a four digit classification code to PTC incidents for PSP's own internal reporting. (See question 30 Post Incident Processing) We are looking to the proposers for guidance on RMS. 15 workstations.

24. Will the PTC Please provide more detailed information on the current CADS product? (I.e. Vendor, Product, Version, Programming language, database platform, etc)

Orbacom Genisis CAD version 6.14.5 with GenNET webview.

25. Is the PTC looking to customize an existing commercial-off-the-shelf (COTS) product or is the preference for a completely custom developed solution?

The Commission is seeking an "off the shelf" CAD system with minor custom "interface" work (Vision 21 call Box and MIST).

26. Has the PTC seen any COTS products which meet your needs?

Product demos will be scheduled after the proposals have been reviewed.

27. Are you able to disclose the budget for this project, and if so what is it?

This project is in the category of projects with cost estimates ranging from \$1million to \$5million.

28. What is the expected timeline for deployment and full acceptance of the new CADS?

6 months after award. (Notice to Proceed)

3.1.4.1 How does the PTC determine if external agency resources (other than PSP) are available?

At time of dispatch while conferring with the external agency's dispatch.

29. 3.1.7.4.5.a What RMS System is the PTC using and how is the RMS data for these reports acquired?

PSP RMS is the Orbacom RMS package (a VERY early version). In our version of the Orbacom system, there is only one database. The RMS software pulls data from the CAD tables and populates the RMS tables in the same database. We are looking to the proposers for guidance on RMS.

30. 3.2.6 Post Incident Processing Interface – Can the PTC please confirm whether this is a user interface, (I.e within the vendor software) or an external system interface?

User interface. (within the proposers software) PSP has a need to add a four digit classification code to PTC incidents for PSP's own internal reporting (Post Incident Processing). (Maybe synonymous with RMS?)

31. 3.2.7 Fire and EMS Interface – Can the PTC please confirm whether this is a user interface, (I.e within the vendor software) or an external system interface?

User interface within the vendor software.

32. 3.2.8 Wrecker Service Interface – Can the PTC please confirm whether this is a user interface, (I.e within the vendor software) or an external system interface?

User interface within the vendor software.

33. 3.2.10 HazMat Interface – Does the PTC already have an electronic version of the HazMat database, or is the vendor expected to provide one?

Vendor provided.

34. Is there a sample contract or standard Terms & Conditions for the PA Turnpike commission?

The Commission contract terms and conditions will be presented to and negotiated with the selected Proposer.

35. Does PTC expect a WBS and Project Schedule to be provided? If so, is that to be in Microsoft Project format and provided as part of RFP response item in Task II-3?

Yes. Microsoft Project format is allowed.

36. It is noted that PTC expects a limit of 50 pages for the response. Given that the mandatory requirements matrix constitutes 26 pages in the response (Section II-5),), and the project schedule and workplan could include a significant number of pages as well (Section II-3), is it correct to assume that PTC's intent was to make this limitation related specifically to these combined sections: II-1, II-2, II-4, II-6, II-7.

The 26 page compliance matrix is excluded from the 50 page limit.

37. It is noted that PTC expects on page 4 that installation, configuration, data entry, and training shall be completed within six (6) months of the effective date. Is it correct to assume that PTC wants a vendor to propose a project that is a transfer and modification of a currently existing CAD system versus a from the ground up development effort? If PTC is open to a from scratch development effort, is it correct to assume that the vendor must still meet the approximate six month completion requirement?

That is correct. The Commission is seeking an "off the shelf" CAD system with minor custom "interface" work (Vision 21 call Box and MIST). Should the Commission opt for a "scratch effort", the 6 month deadline still applies.

38. On page 8 of the RFP, can PTC elaborate on what information it expects specifically related to "overhead" in items b and h?

Any labor overhead costs or general overhead costs, which will be charged to the Commission in addition to direct labor costs, should be specified and included in your Total Cost. As stated, if there is no labor/general overhead cost in your proposal, so state.

39. On page 11 and then later on in the RFP a CDR, or Critical Design Review, is noted. This is not noted as a formal deliverable, but appears to be a significant item in the critical path of the project. Can PTC elaborate on its definition of this event, its intent, and placement in the overall project plan? Is this the same as the Design Review Meetings?

This may be considered as a Design Review Meeting.

40. On page 12 of the RFP PTC requests that the Vendor shall assist in the maintenance and upgrade of third-party software elements essential to the operation of the PTC-CADS. Is it correct to assume that this is specific only to those third party software programs incorporated to meet functional requirements in Attachment A?

No. The vendor is responsible for the proper operation of ALL of the CAD interfaces. This includes, but is not limited to, attachments A & B (call box & MIST interface), the CLEAN/NCIC interface, TDD interface, Hazmat interface, AVL capabilities, etc.

Additionally, is it correct to assume that PTC did not intend for the vendor to factor into its cost the upgrade of Operating Systems and other peripheral software solutions not essential, but related, to the operation of the CAD system?

Correct.

41. Could PTC elaborate on the RFP requirements implied in section I-20? Specifically, could it provide clarification on the term "database entry" and what content it foresees the vendor entering? Also, please elaborate on "report generation."

"database entry" = populating the new CAD database with locations, responses, units, etc. (all necessary data to ensure proper system operation).

"report generation" = any "canned" CAD system reports, custom reports requested, and training thereof.

42. In Section II-7 PTC notes participation for a MBE/WBE at 10%. First, is this exclusive of the maintenance contract, as it is typical that organizations in the CAD market have dedicated maintenance organizations for the software and this is not usually a place where subcontractors or partners integrate? Also, what is this 10% of (price or hours)?

There is no M/WBE exclusion for the maintenance portion of the contract. 10% is of price.

43. Can PTC please provide specifics on the equipment and environment in which the system is to operate.

See section 3.1.2 of the functional requirements document.

44. Can PTC please provide specifics on number of concurrent users and daily incidents it has recorded in past usage analysis. Please provide details on typical and maximum for both CAD and Network Management.

CAD Full Dispatch (includes CAD & Network Control): 25-50. Web-view is unlimited.

45. So that the vendor can accurately scope and cost the effort around complying with this requirement, could PTC please provide additional details on what metrics need to be collected and what metric related data needs to be reported?

Response time metrics based on unit status code changes.

46. For each interface noted in the RFP, can PTC answer the following questions:

1. Is the interface expected to be batch or real time? If real time, does the system to be interfaced to have an open API?

See attachment A & B (Call Box and MIST interface)

2. What is the technology and database of the system to be interfaced to?

See attachment A & B (Call Box and MIST interface)

3. What specific information does PTC see being exchanged between the CAD and the other system?

See attachment B (MIST interface)

4. Can PTC provide the format of each of the interfaces (text file, custom file, etc.)

See attachment A & B (Call Box and MIST interface)

47. On page 4-1 PTC has requested a series of design review meetings on the "complete" design of the system. A complete design requires all functionality to be addressed before this review and illustrated in a deliverable. In reviewing the activities based on the requested length of review and in the sequence which PTC is requesting, it is revealed that this series of activities as PTC has requested will likely take more than two calendar months to complete. This review and approval period would then appear to constitute 33% of the six month completion mandate noted in the RFP. In context this review would then leave only four months for all of the other activities noted in the RFP such as the design itself, construction, documentation, and installation and training on the system. Could PTC please elaborate on the schedule requirements related to this review and the overall project itself? Given this project balance, is PTC open to a longer overall schedule to accommodate the requested review periods noted?

The Commission is seeking an "off the shelf" CAD system with minor custom "interface" work (Vision 21 call Box and MIST). The Commission is committed to a 6 month timeframe.

48. If the design review schedule is fixed as stated in the RFP, could PTC elaborate on its expectations of the vendor as it relates to project team utilization. The large gap between design activities and construction would leave members of the project team with as much as a 2 month gap. This could require PTC to be open to a change in vendor personnel from the completion of the design activities to the beginning of construction so that the vendor can perform appropriate utilization and resource leveling goals common in any professional services organization. If this is not PTC's intent, would the commission then be open to an alternative such as an Iterative Methodology that allows the commission to review and approve the system development and

design in stages? This maximizes resource utilization allowing for better cost and also allows the commission to have ample input into the evolution of the design and construction.

The Commission is seeking an "off the shelf" CAD system with minor custom "interface" work (Vision 21 call Box and MIST). The Commission is committed to a 6 month timeframe.

49. Can PTC elaborate on what it means by an ITS device?

ITS: Intelligent Traffic System (devices such as CCTV, RTMS, DMS/VMS, RWIS)

50. On page 5-1 of the RFP it notes the need for a dry run test. It notes specifically in the RFP that this "Dry Run" can not be scheduled before all documentation is submitted. The Dry Run is prior to the Stand Alone and System Acceptance Test and it is reasonable to expect that those testing tasks will likely produce needed modifications to the documentation. Given this, would it be acceptable that the vendors scheduled a draft review of documentation for PTC prior to the dry run and structured the final Documentation review and approval tasks after the acceptance test? This would allow PTC to assess the progress of the documentation and even use it as reference throughout remaining tasks while also allowing for the modifications driven from events in acceptance testing that are standard practice in projects such as this.

Yes.

51. On pages 4 and 11 of the RFP PTC notes that the vendor is to "install" the system. We could not find any additional detail within the RFP on this expectation. We apologize if we somehow have missed it, but could PTC please elaborate on its expectations in this area.

The Commission expects the successful proposer to install, configure, and test the new CAD system software.

52. PTC notes in the RFP: "The CADS supplier shall ensure that the installation of the CADS clients, servers, and browser based applications does not interfere with the existing non CADS software also installed on these machines." To address this requirement could PTC please provide a complete list of the software on each of the machines it intends to operate the new CAD system. Also, could PTC please provide the process and decision criteria it intends to utilize to determine whether another system's issue was caused by the new CAD system.

The Commission provided workstations may have the following software installed: Microsoft Office 2003 (all components) Internet Explorer 6 FireFox MIST (Telvent Farradyne ITS control software) DR2000 Platinum (H.I.S. Highway Advisory Radio control software) SAP (Business software) SATS Menu (TransCore Toll Plaza status software) Orbacom CAD software Orbacom RMS software

The Commission will utilize an A-B-A troubleshooting approach. IE: if the application ran with no errors before the new CAD system was deployed but doesn't work afterwards... The CAD software will be uninstalled and the affected application re-tested for proper operation.

53. It notes that PTC requires 30 day fault free operation of the system. Is this meant to imply that this should be prior to production roll-out? Also, will PTC be providing a test environment that exactly mirrors the production environment in which the system is to operate?

The 30 day "fault-free" operational period starts on the day of production roll-out. The test environment will become available after the existing CAD system is decommissioned. 54. Is it correct to assume that PTC would like to be provided all of the source code of the CAD system and have sufficient privileges to modify and customize the system?

Yes.

55. On page 7 of the RFP, Section II-5, Past performance, requires that each reference include both the prime contractor and all proposed subcontractors, in other words, the same "team" being proposed of the Pennsylvania Turnpike Commission contract. However, Section II-7, M/W/DBE/ Participation, on the same page indicates that "...Proposed DBE/MBE/WBE firms be certified by the Pennsylvania Department of Transportation, Pennsylvania Department of General Services, or the PA UCP at the time of submission of the proposal."

Part 1 – Other than a Pennsylvania-based vendor, it is unlikely that any Public Safety vendor can provide references that meet both these requirements. Does this automatically exclude a vendor from bidding?

Proposer should include contract/subcontract descriptions for themselves as well as any major subcontractors as outlined in II-5. There is no conflict between this provision and Section II-7.

Part 2 – What does UCP stand for?

PA Unified Certification Program.

Part 3 – Do the Pennsylvania Department of Transportation, Pennsylvania Department of General Services, and the PA UCP have a list of certified DBE/MBE/WBE firms that we can obtain?

PA Unified Certification Program, www.paucp.com

PA Department of General Services, <u>www.dgs.state.pa.us</u> (click on link to Woman/Minority Business, look on right panel for M/WBE Database

PA Dept. of Transportation does not maintain a separate M/W/DBE list; they are a member of the PA UCP

The Commission will also acknowledge M/W/DBE vendors certified by the following: Certification by any agency given reciprocity by DGS (check website) National Minority Supplier Development Council (NMSDC) at <u>www.nmsdc.org</u> Women Business Enterprise National Council <u>www.wbenc.org</u> U.S. Small Business Administration

56. Page 13 of the RFP, Section IV-4, Reports and Project Control, item b, Status Report states, "A bi-weekly progress report..." Biweekly can mean either twice weekly or once every 2 weeks. Which is the correct meaning here?

Once every 2 weeks unless necessity facilitates acceleration of meeting frequency.

57. Page 3-3, Section 3.1.2.1, Client-Server Based, Item 1 states, "The CADS client software shall run on existing PTC owned Dell Precision 380 workstations with 3.2 gigahertz Pentium 4 processors, 1 GB RAM, USB Keyboards and mice, with Colorgraphic Xentera GT quad display adapters (capable of supporting up to 4 displays – currently supporting 3 flat panel displays)." Please tell vendors how much hard disk space is provided on these workstations.

The Commission provided workstations are configured with 74 gig drives. Of that, approximately 55 gig is free space.

58. Page 3-4, Section 3.1.2.1, Client-Server Based, Item 2 states, "The CADS server based software shall run on existing PTC owned HP ProLiant DL380 G4 servers with dual 3.60 gigahertz Intel Xeon processors, 4 GB RAM, with 36.41 GB mirrored drives." Please tell vendors how many 36.41 mirrored disks are in the array.

Referencing Figure 3-1 on page 3-6 of the functional requirements document: Cocadsdb, Codevcadsdb, & Ercads contain 6 drives in the arrays. (3 drives mirrored to a second drive) Cocadsrpt & Codevcadsrpt contain 4 drives in the arrays. (2 drives mirrored to a second drive) (36.4 gig parallel SCSI drive configuration)

59. Page 3-4, Section 3.1.2.1, Client-Server Based, Item 2 states, "PTC owned keyboard/video/mouse devices are available at both Harrisburg and King of Prussia as well as the Eastern Regional Office (ERO) server locations and may be used to support the user interfaces to the existing PTC equipment. The Proposer shall identify if new keyboard/video/moue devices shall be provided." Can vendors assume that this equipment is Dell Precision 380 multi-monitor workstation described in question 57 above?

Yes. (Clarification: King of Prussia and Eastern Regional Office (ERO) are the same location.)

60. Page 3-4, Section 3.1.2.1, Client-Server Based, Item 4 states, "A PTC owned database backup server will be available for the primary CADS server." Can vendors assume that this sever is configured as specified in Item 2 from the same page? ("The CADS server based software shall run on existing PTC owned HP ProLiant DL380 G4 servers with dual 3.60 gigahertz Intel Xeon processors, 4 GB RAM, with 36.41 GB mirrored drives.")

Yes. See answer to question 58.

61. Page 3-4, Section 3.1.2.1, Client-Server Based, Item 4 states, "The PTC owned network shall be the transport within the primary CADS server facility. Multiple field locations, including the back-up server location, are shown in Figure 3-1." Please provide details concerning the cabling and bandwidth availability, both for the LAN and for the WAN.

WAN throughput to remote locations is 512K or higher. LAN throughput is 100 Mbps.

62. Page 3-4, Section 3.1.2.1, Client-Server Based, Item 9 states, "In addition to the dispatch workstations and records management workstations, the Proposer shall provide and install administrative software packages on forty-five (45) PTC owned workstations. The CADS supplier shall provide software licenses sufficient for the complete deployment of these 45 workstations. The exact number of workstations and software to be installed on each workstation is shown in the inventory table.

a. Most of these work stations shall require the ability to view (only) active calls.

b. A quantity of these, not to exceed fifteen (15), shall also require the functionality to view only the "*Network Management*" user group's active calls and databases. These shall be connected via the Commission's network at the primary and remote facilities.

c. In the future, the PTC intends to install CADS administrative software on additional workstations. The CADS supplier as part of his price bid shall include as an option to PTC, cost of additional CADS administrative licenses in bundle of 25 licenses."

The product that would be used to satisfy this requirement is priced on the number of concurrent users expected to access to the software simultaneously. For example, if the PTC expects no more that 15 users to access the application at any one time, then the PTC would only pay for 15 licenses, though 45 workstations would have access to the software. How many concurrent users are expected to access the software concurrently?

It is assumed that:

a. These workstations would utilize the "web-view" CAD which currently is unlimited in use.

b. These workstations would also utilize the "web-view" CAD with viewable calls restricted by login credentials. IE: They would only see Network Control calls and would not see dispatcher calls.

c. CAD administrative functions will be limited to 5 workstations. (This eliminates the need for costing in bundles of 25 licenses.)

If this question is referencing SQL server, we license by processor, not by the number of users.

63. The server operating system specified on page 3-5 under Section 3.1.2.2, Required Operating System, Item 1a, is Windows 2003 server. Please specify whether the PTC uses a 32 bit or 64 bit version.

32 bit.

64. There is no indication in the RFP that an ANI/ALI system is employed in the receiving of calls. Should vendors assume that all incoming phone traffic for potential event generation is coming into the system from standard 7-digit lines or call boxes and that the entry of location information is a manual process by entry of an address, commonplace or premise code or alias identifier into the call for service mask? Please provide any available details of existing or expected phone system integration.

Currently there is no expectation of phone integration. The capability for future phone integration is assumed. **Call Boxes:** The current Orbacom system utilizes the ANI/ALI system as a look up table for call box locations. The 12 digit call box address is stripped of all digits except the last four which are unique to each individual call box. The remaining 4 digits are then re-mapped in the following format: 999-999-xxxx where '999' is substituted for the area code and exchange and the last four digits (xxxx) are the 4 digits of that particular call box address. The new 999-999-xxxx number is then cross referenced in the ANI/ALI database in order to automatically populate the "location" field in the auto-generated incident.

65. It is stated in the RFP that the vendor will integrate with GPS technologies (for both incident reporting and resource monitoring), communicate with the PSP Mobile Data Terminals (MDT). Can specifics of the GPS / AVL devices the vendor is to integrate to be provided for technical clarification? Will GPS be utilized only for PSP or is it expected that other agencies / departments GPS / AVL data feed into the CAD system?

All AVL data would flow from the state wide 800MHz Ma/Com Open Sky radio system. See answer to question 66 for PSP Mobile Data Terminal (MDT) information.

66. Can more information be provided on the Existing Biokey MDU system being employed? Specifically, we would like to have specific version, protocols of information exchange, technical information on how Biokey processes messaging / status, etc. Any further description and detail of expected functionality for such an interface would be helpful. Can further information be supplied regarding the API for the Biokey version to be utilized?

From PSP: We currently run with InfoServer 6.03 (server) and MobileCop 6.0 (client). We will have to see what non-PSP specific information we can provide to answer the information exchange/protocols we use programs such as IBM WebSphere, Apache Web Server, etc. to provide functionality to CLEAN, JNET, MEMEX, etc. Not sure of what other surrounding technological questions they have but basically we run over a 9600 baud connection over a StateWide Radio connection using a MA/Com Radio. So size of packets and the number of packets would need to be limited due to the limited amount of traffic have to play with.

The only initial concern we can see is that what client related changes would each potential vendor require because this will have to be done manually per car. We have no SMS like utility to push huge amounts of data changes to clients. Also another potential impact would be who would be providing the support? We currently do not have staff to support two different CAD systems within the Mobile environment.

PDF data sheets are also available for: BIO Key's Info Server 6.0, MobileCop, & EZ-License.

67. There were few requirements describing the expectation of workflow between the PSP MDU and the CAD system. Can a more detailed explanation of the requirements of interaction be provided?

See answer to question 66.

68. Can further clarification be provided to on the exact queries desired to be run through NCIC & CLEAN? Are there any other external or internal data sources that are expected to be queried when running a person, plate, VIN, etc? Are there further expectations than merely a strait textual return for each query from there desired sources? Is there any expectation of update capability to external justice or DMV databases?

Standard queries. No other external or internal databases exist. Straight textual response is expected. We do not anticipate updating to external justice or DMV databases as PSP already has that ability within their department.

69. Are there any requirements for integration into paging or faxing upon generation of an incident, or requirements or expatiations to, at any point within the call / event process to facilitate faxing or paging from the CAD system to agencies, departments, groups, vehicles or people?

No, not at this time.

70. Can a full record sample of a rolodex entry with field length and category requirements be provided? "Type" is assumed to indicate a category. How many Categories are required for your Rolodex replacement? Who are your common rolodex users?

A sample of the rolodex table can be provided in Excel format. "Type / Category" should be a field within the rolodex table. Entries for this field should be settable by the system administrator(s). (IE: unlimited) Both dispatchers and Network Control will access the rolodex. Web-users do not have access to the rolodex.

71. Regarding section 3.1.7.4.4 thru 3.1.7.4.7 : A large listing of report titles was provided in the RFP that seemed to imply that these are to be canned reports. However, elsewhere in the RFP you have a requirement for the reports to be capable of generation utilizing Crystal reports, and it is also specified that the vendor will provide training for the creation of reports from our databases.

Can greater detail on the reporting requirements be provided? Specifically, a more detailed description of the various reports purpose, who will be generating these reports, specific data elements required, the source expectation of the data (CAD / MIST / RMS) and whether each listed is mandated to be a canned report or if it can be satisfied through 3rd party software (Crystal or other) or ad-hoc report generation.

The reports listed in section 3.1.7.4.4 of the functional requirements document (FRD) are the expected canned reports. Reports listed in section 3.1.7.4.5 are examples of existing reports that are compiled outside of the system. We expect the list of "outside" reports to be reduced considerably. However, the proposer will provide training to system administrators so that additional reports can be created on an as needed basis by PTC personnel.

72. Regarding section 3.1.7.4.4 thru 3.1.7.4.7: The reporting requirements also list several reports revolving around RMS. Can further clarification on the RMS reports requirements be provided? Specifically what RMS is being utilized, and the specific nature of the reports involving RMS. It is not clear from the RFP what, if any true RMS the vendor's application is to be interfaced to, or if the expectation is that the vendor software will provide reports from an RMS data source. Can this be clarified?

See answer to question 71. PSP has a need to add a four digit classification code to PTC incidents for PSP's own internal reporting (Post Incident Processing). If Post Incident Processing is accomplished without the need for RMS, then there will be no need for RMS reporting.

73. Remedy: Further detail on the vision for integration to Remedy is requested including the expected interaction between the vendor's CAD solution and the Remedy trouble ticket system. Is the listing of this requirement seeking to know if the vendor will in future support a single or Bidirectional interface to remedy? It is unknown if Network Control's incident tracking will migrate to the Remedy platform in the future. The Commission would be interested only in existing Remedy interfaces.

74. Remedy: Can further detail be provided regarding the version of Remedy utilized, the Operating System platform and database utilized by Remedy?

Remedy Mid Tier 6.3

75. Wrecker Service: It appears from the RFP that there is no requirement for a rotation service for wrecker management. Can PTC confirm this?

Correct. PTC wrecker services are contracted for specific areas and do NOT rotate.

76. Wrecker Service: Further illustration of the workflow involved with wrecker service, as it exists in the current system, and as future use in the new system is envisioned is requested.

This will be a user interface within the vendor software.

77. Hazmat Interfaces: Is the electronic version of the PTC's Emergency Response Module stored on the local network? What file format is it and what is the file size.

The proposer shall provide a new HAZMAT solution.

78. 3.1.2.1.9: In addition to the dispatch workstations and records management workstations, the proposer shall provide and install administrative software packages on forty-five (45) PTC owned workstations.

The CADS supplier shall provide software licenses sufficient for the complete deployment of these 45 workstations.

Further clarification as to the administrative functions required for these packages is requested.. Are these to be to access CAD administrative tools for code file building and system maintenance, or is this to be situational awareness / reporting / communication portal as may be provided through a web based application?

There seems to be some confusion between system administration and clerical administrative functions. There will be 5 system administration workstations. The remaining clerical administrative workstations will access the system via the web-based interface for various reporting needs. The current web-view system is unlimited.

79. 3.1.2.3.2.b.iv: Please clarify the post incident process addition of code to existing PSP incident only field. A sample of these codes and their format is requested, and explanation as to the use of these codes and the purpose / use of the PSP incident only field.

PSP has a need to add a four digit classification code to PTC incidents for PSP's own internal reporting (Post Incident Processing).

80. 3.1.3.1.2.d: For what purpose and what report needs is the date of birth collected for caller identification?

This will give the dispatcher the option to perform a CLEAN / NCIC check on the caller to augment trooper safety.

81. 3.1.3.1.3.c.i: Please clarify, when stated that the number of roadways (hence letters) shall be expandable to 26 is this to say that the entire alphabet must be utilizable as the first character or that the field entry must support no less than 26 total characters in a string?

As stated in section 3.1.3.1.3.c.i: Any letter out of the entire alphabet may be used as the first digit identifier for our roadways. That allows for 26 options and they will be settable by the system administrator(s).

82. 3.1.3.2.1.a: Please clarify, when stating that the CADS shall have a minimum of 124 editable incident types and shall be assignable to one or more user groups, is this meant as an indication that incidents are distributed to call takers / dispatchers / supervisory positions based on call type or is this an indication that various agencies / departments need to have independent and shared incident types for a multi-jurisdictional operation? Can a use case be provided for clarification?

The system shall provide at least 124 incident types shared between the dispatcher & Network Control user groups. Refer to section 3.1.2.3 Security Levels to determine which user falls into which user group.

83. 3.1.3.2.2.a: The CADS shall provide a list of all dispatch incident types to dispatchers and a list of all Network Control incidents to Network Control users . Would it be possible to provide a comparative list to better illustrate the needs of this requirement? What defines whether something is a Network Control Incident?

Refer to section 3.1.1.1 of the functional requirements document (FRD).

84. 3.1.3.2.15: Can samples of a Pre-Plan card and a native file for evaluation of compliance to this requirement be provided; as well as further technical detail on what is used to create the Pre-Plans currently, and what data elements are part of the Pre-Plan?

As stated in the functional requirements document (FRD), these info cards "will be" generated by the PTC. They do not exist in the current system and will be developed for the new CAD.

85. 3.1.4.3: The ability to edit a range of records simultaneously shall be required. Please elaborate on this requirement. What types of records are to be editable simultaneously, and what type of update. A use case example for clarification is requested.

Refer to section 3.1.4.4 of the functional requirements document (FRD). This requirement relates to database entry.

86. 3.1.4.7: This ESN database shall have the capacity to hold a minimum of 50,000 ESN's. The Glossary definition of an ESN is simply an Emergency Service Number. This term has multiple meanings in Telco / Emergency Services and the acronym is overly common but not universal in definition. For the purposes of absolute clarity, a detailed description of an ESN as utilized and a record sample are requested.

The existing system stores multiple incident response scenarios with an ESN. Currently, ESNs can cover a range of mileposts. Commission wishes to migrate to a system that stores these multiple response scenarios for each tenth of mile (This assumes that the ESN will now only cover 1/10th of mile instead of a range of mileposts). This will allow response scenarios to be updated without the need to modify the ESN – unless additional roadways are added to the system.

Refer to section 3.1.4.4 of the functional requirements document (FRD). This requirement relates to database entry.

87. 3.1.4.11: Regarding Statuses, clarification on the use of statuses as they pertain to dispatch operation is requested. Several of the statuses listed appear to be common dispatch statuses while others seem to be a mere label or perhaps a conditional availability marker.

Please detail the use case of the following statuses, and if there are any system mechanical / logical triggers for system automatic action required upon invocation of these statuses:

- CZ Construction Zone
- EP Traffic Flow Restored
- NR No Response (Fire/EMS)

- OP Roadway Lane(s) Open
- SD Special Detail
- RP Routine Roadway Patrol
- RT Non-Emergency Transport

All status codes shall be definable by the system administrator(s). It is assumed that the system administrator(s) will have the ability to define the status code with an "available" or "unavailable" tag. Any associated timers / triggers shall also be definable and settable by the system administrator(s).

88. 3.1.4.11: Regarding Statuses, clarification on the use of statuses as they pertain to Transporting & Routing to Hospitals, Justice/Court is requested. Is the need for separate statuses for these based on an inability in your current system to reflect where a vehicle/unit/resource is Enroute to or arrived at?

Please detail the use case of the following statuses, and if there are any system mechanical / logical triggers for system automatic action required upon invocation of these statuses:

- EH En-route to Hospital
- EJ En-route to Justice/Court
- OH On Scene at Hospital
- OJ On Scene at Justice/Court

Status codes listed in section 3.1.4.11 are examples of the status codes in the current CAD system and are included as reference. See answer to question 87.

89. On Duty and Off Duty are listed as required status; however the RFP makes no reference to rostering of personnel on or off units. Is this tracked, and is the ability to schedule a roster / log personnel on and off vehicles required? What is the current process for bringing a unit / vehicle / resource on duty in the current CADS.

Scheduling a roster is not a requirement. Personnel call on & off duty via the 2-way radio system. The dispatcher then places the appropriate status code on the unit(s).

90. 3.1.6.1: The RFP states the CADS map shall be based on the PTC'S Geographic Information System (GIS) map. Please confirm the data formats of the PTC's Geographic Information System to be utilized by the new CADS, and the responsible party of source and update of this data. Can a integrated CADs map substitute for the PTS map?

The current status of the Commission's GIS department is in flux. An integrated CAD map is a viable option at this time.

91. 3.1.7.2.1: The Common place Database shall be searchable by common place name and alias. Please detail the definition of alias as it pertains to this requirement. Is this a code identifier as might be utilized in an address entry field that resolves to a common place (MD1) or is this defining an alias as "McDonald's" also resolving by "Mickey D's", for example.

The current common place feature allows the dispatcher to search a lookup table that cross references names and aliases to a common location. A sample of the common place table can be provided in Excel format. The current common place table contains a "name" field and an "alias" field that are searched. When a match or partial match is found, the dispatcher selects the "best" match and the system auto populates the location field in the call entry window with location data cross referenced in the common place search. Both dispatchers and Network Control will access the common place feature. Web-users do not have access to the common place feature.

92. 3.1.7.5.1: The CADS shall have the ability (System Administrator definable) to automatically assign a T-number based upon the resource unit (trooper or car) assigned to the call, the incident type of the call, and the location of the call.

The system administrator shall have the ability to set the system to auto generate the number OR set the system to manual whereby the dispatcher manually instructs the system to generate the number.

If multiple resources are assigned to the same call, both resources receive the same T-number.

It is unclear whether each different resource type is to have a different numbering pool, and if there are to be different numbering pools based on the incident type. Please clarify if by type of call you mean different agency / discipline / department, or if you mean by each individual problem nature recorded for an incident.

This applies to PSP agencies only. Each station has it's own numbering pool.

Also please clarify if multiple resources are assigned to the call from different areas, if they are to share the same T-number or if they are to get a unique one.

Presently, if a unit assists from a neighboring station, the call is copied and a new T-number (from the neighboring station number pool) is assigned to the assisting unit.

At what point in the active call life are these numbers are issued? Or, are they are issued from a call closing reason or disposition?

Currently, T-numbers are issued during the active call.

93. 3.1.7.6.2: Once the previous incident (event) number is found, the CADS shall provide a user interface that allows the user to add or edit a four digit reclassification code.

3.1.7.6.3: The reports may include (as selected by the user) but are not limited to the following data fields: incident (event) number, T-Number, date range, 4 digit reclassification code, agency, counts and totals of those data fields, or any combination thereof.

Is Post Incident Processing conducted purely after the close of an incident, meaning that there are no active resources assigned to the incident and the incident is not in a visible dispatch queue or while the call is still in an active state? Please provide further clarification on the workflow in Post Incident Processing, and if PSP at TOC are the only ones conducting Post Incident Processing. Is the reclassification code relevant only to reports, or does this has a mechanical implication / function downstream in the system?

PSP has a need to add a four digit classification code to PTC incidents for PSP's own internal reporting (Post Incident Processing). This action occurs after the incident is closed. All PSP stations perform Post Incident Processing (this includes the remote locations).

94. 3.2.2 This seems to indicate that the CADS should have the potential or ability to interface to PSP's BioKey mobile. 3.1.4.8 and 3.1.4.1.5 indicates same. Please clarify that this interface is a current requirement and should be priced in this response.

See answer to question 66.

95. In the new and expanded ESN structure, the RFP indicates that lane data, gates, mileposts, Wrecker's assigned to an area, Fire, EMS, Hazmat, Turnpike maintenance, and PSP responder information assigned to each location will flow to dispatch position as a part of the ESN data when a location/alias is entered. Please verify that this data will be available and provide a sample of the data.
This information relates to the system's suggested response scenario in relation to the selected incident type for the call. This data currently resides in Excel spread sheet form and is in milepost range format. Our current ESN data will not map to the new system with the migration to 1/10th mile ESNs. Hence the automated data entry requirement in questions 85 & 86.

96. As stated in section 3.1.3, the database shall have a minimum of capacity of 50,000 ESN, each of which include a minimum of 25 response boxes (A total of 1,250,000 database entries). Can a more detailed / definitive description of a response box in relation to its use by this organization be provided?

See answer to question 86.

97. Referencing Figure 3-1 please verify the following listing as to functionality (Type of CADS functionality/licensing)

CABDOE200031 Network Control (Supervisor lisc)*

- 25 Duty Officer (Supervisor lisc)*
- 29 Shift Leader (Full Dispatcher)
- 17 District 1 (Full Dispatcher)
- 26 PSP (Full Dispatcher)
- 63 District 2 (Full Dispatcher)
- 18 District (Full Dispatcher)
- 23 District 4 (Full dispatcher)
- 21 District 5 (Full Dispatcher)
- 43 Call Taker 1 (Full Dispatcher)
- 44 Call taker 2 (Full Dispatcher)
- 87 Radio Shop CAD (Full Dispatcher)
- 15 CAD Admin (SYS Admin)*
- 33 Spare Quad (Full Dispatcher)
- 65 Spare Single (Full Dispatcher)

*Should these positions be capable of full dispatching?

Yes.

ERO Positions

- 41 Desk 1 (Full Dispatcher)
- 39 RMS 2 (Full Dispatcher)
- 35 CAD 3 (Full Dispatcher)
- 37 CAD 4 (Full Dispatcher)

Specify connectivity type and bandwidth to this site

Leased DS3 connection.

Remote sites

47	Browser CAD or Full Dispatcher (Specify)
49	"
51	"
53	"
55	"
57	66
59	66
61	66
Speci	fy connectivity and bandwidth to these sites

Remote sites are intended to be web-view with appropriate search, reporting, and Post Incident Processing abilities. Average WAN throughput to these remote locations is 512K or higher.

RFP specified Browser positions -45

No positions are listed dedicated for training/test. Is there a desire from TPC for these dedicated positions? If yes please specify the number of positions to quote. Where would these be located?

6 to 10 training positions may be desired in the near future. These will be located within the central office building campus here in Highspire.

Please verify that 3.1.2.1.9.c referring to bundles of 25 "administrative lisc" are in fact browser/view only positions.

Correct. However the current web-view system is unlimited.

98. We are requesting an extension of the question submission period to August 8. This date is still 6 weeks before the due date. Can you comply with this request?

We are prepared to discuss extending the question deadline at the pre-proposal conference.

99. Full CAD workstations needed are 25-50. Please clarify how many actually do dispatch? How many, if any are optional. Confirm 15 Post Incident Processing & 5 CAD admin.

All full CAD workstations will dispatch. You may quote 25 full dispatch positions and groups of 5 thereafter (up to 50). 15 Post Incident Processing and 5 CAD system admin positions are confirmed.

100. Will PTC provide API info for Orbacom RMS. Will Orbacom handle the data import functions if the proposer exports in the appropriate format? What is the preferred format / export method.

The Commission will keep and maintain the existing Orbacom System (database) and related software for the remainder of our record retention period. Post Incident Processing shall be contained within the new CAD system. The new CAD system will be completely separate from the old system. There is no need to interface with the old Orbacom system.

101. What is the current status of the PTC's GIS data and current software being used by PTC's GIS department?

The Commission is utilizing internal staff to coordinate monthly updates to the GIS data. Our current GIS software is ESRI based.

102. Can the vendor work with the PTC to help define PTC's future GIS administration for commonality?

That issue is not covered by this RFP. A contract entered into as a result of this RFP would not prevent the successful proposer from bidding on any Commission related GIS proposals/contracts.

103. Does the PTC dispatch PSP directly?

Yes. PTC radio operators (dispatchers) dispatch PSP troop T personnel directly.

104. Is there a requirement for historical Genisis data to be utilized in the new CAD system? IE: Will the vendor be required to extract and convert and then import historical Genisis data into the new CADS for historical retention purposes?

The Commission will keep and maintain the existing Orbacom System (database) and related software for the remainder of our record retention period. Post Incident Processing shall be contained within the new CAD system. The new CAD system will be completely separate from the old system. There is no need to interface with the old Orbacom system.

105. Approximately how many incidents are recorded – Does PTC experience, on an annual basis?

Approximately 130,000 incidents. Actual 2007 count (TOTAL, includes Dispatch & Network Control Incidents): 123,234 incidents.

106. Q29 – By "we are looking to the proposer for guidance on RMS" mean PTC is asking for proposers to submit alternatives to the existing RMS system? IE: Propose a new RMS system as part of this RFP response?

The existing RMS system will be utilized only to support reclassifying incidents PRIOR to the cutover of the new CAD system. The new CAD system will include its own Post Incident Processing module.

107. What is the source of the current ANI/ALI database?

It is a table within the current Genisis CAD database. A sample of the ANI/ALI table can be provided in Excel format.

108. What is the current work flow of the Network Management? (Network Control assumed)

Network Control processes system trouble calls from field staff and dispatches the appropriate personnel to repair the outage. (The PTC Call Box System also supports SigCom's automated Fire Boxes.) Any automated Fire Box "Trouble" calls are routed only to the Network Control group's dispatch consoles. Radio Operators (dispatchers) do NOT see Fire Box "Trouble" calls but do see ALL other Fire Box and Call Box Calls (with the exception of any calls with the "Test" bit set; calls with the "Test" bit set are ignored).

109. What is the map creation work flow (existing)?

The existing map files are stored locally on the workstation. There is a batch file that runs at sign on that updates the map files from the CAD server (if necessary). It is my understanding that those map files contain the ESN information but the "response" data is stored in the database.

110. Where is the funding from?

100% PTC funded.

111. Is there an enterprise – wide solution infrastructure for the interfaces, such as BizTalk, etc.?

No.

112. What does the interface to the trouble ticket system look like today?

Remedy has a web-based user interface.

113. Are there any Call Taker positions or are all full dispatchers?

The 25-50 positions are full dispatch and include any Call Taker positions (for ease of TOC configuration).

114. Q54. In relation to use of source code, is it fair to say that the PTC would want "configuration" ability and not source code? It may / will be tough to guarantee viability of the system otherwise.

The Commission wishes to hold the source code in escrow in the event that the parent company dissolves unexpectedly and is unable to further support the system.

115. MIST interface is only a one way data download from CAD. How is this data used?

MIST, in turn, pushes this data to our Emergency Notification System (ENS) provider. In the future, this data will be utilized to automatically populate public travel advisories and our interactive web map.

116. Any CAD to CAD interfaces expected now or in the future?

This will depend on the success of the new system and will be handled on a "time and material" basis.

117. Describe current pre-plan formats.

The Commission currently has road closure traffic re-route plans (Plan X's) in multiple formats, such as Word 2003, Excel 2003, and html format.

118. Can you describe your Rolodex individual contact requirement?

A sample of the rolodex table can be provided in Excel format. Fields should include but are not limited to: name, address, phone, fax, & type. "Type / Category" should be a field within the rolodex table. Entries for this field should be settable by the system administrator(s). (IE: unlimited) Both dispatchers and Network Control will access the rolodex. Web-users do not have access to the rolodex.

119. Describe lane closure process in CAD; any "mechanical" consequences of from CAD? IE: Gates, Signs, etc.?

The Commission is looking for a check box or drop down menu type of solution to aide in tracking lane closures. Examples: Shoulder, Right Lane, Center Lane, Left Lane, Multiple Lanes. There are no known "triggers" at this time.

120. Will the impending Commonwealth of PA AVL standards project have any impact on AVL needs for the CAD? Will the PSP AVL "data feeds" remain as is or will it change with the new AVL standards?

It is not known at this time. Any AVL data will need to flow from the Commonwealth's 800MHz Ma/Com OpenSky System.

121. Is there a requirement for additional AVL integration with other state agencies such as PennDOT, Department of Corrections, or PEMA?

See answer to question 120. No, many (if not all) state agencies will migrate to the OpenSky System.

122. Are there any ITS initiatives in the future that would need to be integrated?

No. Any future ITS projects will be integrated into the existing MIST system.

All other terms, conditions and requirements of the original RFP dated June 24, 2008 remain unchanged unless modified by this Addendum.