Surveillance Impact Report

Collision Avoidance Mitigation System
San Diego Fire-Rescue Department

DESCRIPTION

The Collision Avoidance Mitigation System (CAMS) is designed as a warning system to preemptively notify first responders of an impending impact to the fire apparatus or emergency operating scene. It is derived from technology originally developed for auto racing and adapted for roadside safety.

The San Diego Fire-Rescue Department (SDFD) intends to use the following contractor-built prototype:

MANUFACTURER'S PRODUCT DESCRIPTIONS:

1. **Collision Avoidance Mitigation System (CAMS)**
   i. Manufacturer: Piece Manufacturing, Inc.
   ii. Manufacturer Description: CAMS is designed as a research and data collection tool to support the engineering and design of a future commercial safety product to warn first responders of an impending collision. The system's primary function is to detect and identify potential collisions involving fire apparatus or emergency scenes posed by approaching vehicles.
   iii. Description source: SETH NEWLIN, DIRECTOR ENG/NPD/R&D, Pierce Manufacturing / Oshkosh Corporation, snewlin@piercemfg.com

PURPOSE

Roadway emergency scenes are inherently hazardous environments, with the continual risk of first responders being hit by oncoming vehicles. Such incidents can have catastrophic consequences for emergency personnel and others operating on scene. To mitigate this danger, SDFD strategically positions fire apparatus to serve as physical barriers, enhancing scene safety during roadway operations.

The Collision Avoidance & Mitigation System (CAMS) prototype, developed by Pierce Manufacturing, Inc. (Pierce) and Pratt Miller Engineering, subsidiaries of Oshkosh Corporation, is designed as a research and data collection tool to support the engineering and design of a future commercial safety product to warn first responders of an impending collision. The system's primary function is to detect and identify potential collisions involving fire apparatus or emergency scenes posed by approaching vehicles.

The CAMS prototype integrates radar and video technologies to monitor oncoming traffic behind stationary emergency vehicles. By comparing and correlating data from both radar and video sources, the system aims to improve detection accuracy and reduce false positives. This data fusion approach enhances the reliability of the system's threat assessment capabilities.

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LOCATION

The CAMS prototype has been mounted on the rear of Engine 18 (Apparatus #2177). Engine 18 is housed in Fire Station 18 located at 4676 Felton Street in the Normal Heights community of San Diego, District 9. The unit was selected due to its proximity to major highways and its frequent deployment to roadway incidents, which will allow for the collection of a substantial volume of data to evaluate and refine the system's performance. The video function of the prototype is currently disabled pending approval of its use.

IMPACT

The CAMS will collect data during normal vehicle operations. The CAMS is configured to record data only when two conditions occur simultaneously: the vehicle park brake is set and the emergency lights are illuminated. This will restrict data collection only to situations where the vehicle is actively on scene of an emergency.

CAMS will currently be used solely for data collection purposes to support analysis and development, with the goal of enhancing the system's accuracy and reliability. If developed into marketable technology, CAMS will be used solely to gather enough data to allow the system to notify first responders of an impending collision while at the scene of an accident with lights flashing.

The uses and deployments of the CAMS technology are not based upon discriminatory or viewpoint-based factors. SDFD's use of surveillance technology is intended to support and benefit the first responders and community members while minimizing and mitigating potential impacts on the civil rights and civil liberties of community members.

MITIGATIONS

Collected data is transferred via a token secured Microsoft Azure cloud storage server, and then downloaded to the local, physical computer for processing and analysis. This computer is physically housed in an access restricted facility, available only to Pratt Miller employees and registered guests who must be accompanied by a Pratt Miller employee. The local computer is password secured and requires physical presence at the computer to allow for log-in, fully remote access is not possible. Data that is transferred via the Azure Cloud server is protected via a security token.

DATA TYPES AND SOURCES

The system collects radar point cloud data to detect and track vehicle position, along with low-resolution video data. This video is used only as a visual reference to verify the radar's outputs when they don't match observed objects. The video resolution is limited to 320×240 pixels to ensure basic vehicle discernment for radar verification without requiring excessive processing or storage.

DATA SECURITY

Collected data is transferred via a token secured Microsoft Azure cloud storage server, and then downloaded to the local, physical computer for processing and analysis. This computer is physically housed in an access restricted facility, available only to Pratt Miller employees and registered guests who must be accompanied by a Pratt Miller employee. The local computer is password secured and requires physical presence at the computer to allow for log-in, fully remote access is not possible. Data that is transferred via the Azure Cloud server is protected via a security token.

This data is classified "Highly Restricted" per Oshkosh Corporation Global Procedure GBL-PROC-RM001 and is confidential to Oshkosh Corporation and its subsidiaries Pierce Manufacturing and Pratt Miller. It will not be released to the public except where legally mandated.

FISCAL COST

No costs will be incurred by the City or Fire-Rescue Department. Any future financial impacts will depend on Fire-Rescue's decision to pursue acquisition of the commercial safety product once it becomes available on the market.

THIRD PARTY DEPENDENCE

Collected data is classified "Highly Restricted" per Oshkosh Corporation Global Procedure GBL-PROC-RM001. It will not be shared with any third parties unless legally required and is confidential to Oshkosh Corporation and its subsidiaries Pierce Manufacturing and Pratt Miller.

ALTERNATIVES

SDFD has not identified alternative products, as CAMS is currently in the prototype phase. SDFD is not aware of, nor has it sought, any commercially available alternatives.

TRACK RECORD

Roadway emergency scenes present inherently dangerous conditions, including the ongoing risk of first responders being struck by moving vehicles. These incidents can lead to severe or fatal outcomes for emergency personnel and others working in the area, in addition to those community members involved in the incident. Preliminary testing of CAMS indicates its potential as an effective means of improving safety at roadway incidents.

Pierce Manufacturing has conducted CAMS testing with several additional public safety agencies, including the Gill, Massachusetts Police Department; Greenfield, Massachusetts Fire Department; and Brighton, Michigan Fire Department. The Milwaukee, Wisconsin Fire Department is currently in the process of authorizing similar testing.

PUBLIC ENGAGEMENT AND COMMENTS

SDFD has made efforts to engage with the public and allow for comments. Use policies have been posted to the SDFD website for citizen review with the ability for citizens to submit comments or ask questions. SDFD will provide a prompt response to any questions that are posed by citizens or other interested parties.

Website: https://www.sandiego.gov/fire/about/technology

On November 26, 2025, SDFD and SDPD issued a joint press release announcing nine community meetings, one in each council district, to be held on December 4, 2025, at 3:00 PM. The locations and summaries of each location are listed below.

- District 1 – La Jolla Recreation Center, 615 Prospect St.
  - Number of citizens in attendance – 0
  - Questions/comments relating to this technology: None received
- District 2 – Point Loma / Hervey Library, 3701 Voltaire St.
  - Number of citizens in attendance – 0
  - Questions/comments relating to this technology: None received
- District 3 – Miracle Potion Café & Tea Room, 690 B St.
  - Number of citizens in attendance – 0
  - Questions/comments relating to this technology: None received
- District 4 – Anchor Church, 1765 Pentecost Way (Host Location)
  - Number of citizens in attendance – 0
  - Questions/comments relating to this technology: None received
- District 5 – Scripps Ranch Civic Association Community Center, 11885 Cypress Canyon Rd.
  - Number of citizens in attendance – 0
  - Questions/comments relating to this technology: None received
- District 6 – Hourglass Park – Room J223, 10440 Black Mountain Rd.
  - Number of citizens in attendance – 0
  - Questions/comments relating to this technology: None received
- District 7 – Mission Trails Visitor Center, 1 Father Junipero Serra Trails
  - Number of citizens in attendance – 0
  - Questions/comments relating to this technology: None received
- District 8 – Otay Mesa – Nestor Branch Library, 3003 Coronado Ave.
  - Number of citizens in attendance – 0
  - Questions/comments relating to this technology: None received
- District 9 – City Heights Library, 3795 Fairmount Ave.
  - Number of citizens in attendance – 0
  - Questions/comments relating to this technology: None received