CALTRANS Fog Detection & Warning System

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August 2009
State Route 99 Fog Accident

- November 3, 2007
- Northbound SR–99 north of American Avenue
- 87 Vehicles including 15 Big Rigs
- 2 Fatalities
Operation Fog Begins 1992

Fog Visibility “Burma Shave” Test Signs

Highway Advisory Radio (HAR)
Fixed and Portable Changeable Message Signs (CMS)

500' VISIBILITY: “SLOW DOWN / DENSE FOG”
200' VISIBILITY: “SLOW / CHP PACE / DO NOT PASS”
Fog Brochures

Not successful: Convoying
Occurrence of “Pile Ups”

Operation Fog Implemented

Fog Season
Operation Fog Speed Pilot Project in 2003
District 10 CAWS California Automated Weather Station

- Deployed 1996
- I–5, SR–99, SR–120 in San Joaquin County
- Detection at 0.5 mile spacing

- Speed < 35 mph: SLOW TRAFFIC AHEAD
- Speed < 11 mph: STOPPED TRAFFIC AHEAD
- Wind Speed > 25 mph: HIGH WIND WARNING
Major Fog Accidents

November 3, 2007
87 Vehicles

February 5, 2002
87 Vehicles

February 12, 2008
16 Vehicles

November 14, 1998
70 Vehicles
Fog Project Initiated

BACKGROUND

Historically, many multiple-vehicle crashes have occurred under adverse weather conditions. Factors that have contributed unpredictability of the time and location of fog occurrence, excessive speed in reduced visibility conditions.

Reduced roadway visibility due to fog represents one transportation community in the San Joaquin Valley conditions.odeled roadway segments where geographic features, weather patterns, and other contributing factors need to investigate whether it is feasible to deploy motorist visibility hazards and provide guidance speed variance and crash risks.

Caltrans is planning an information session in Sacramento, 9 a.m.-12:00 p.m. to invite private industry to discuss idea system.

The system envisioned for District 6 will be developed
System Overview

What are we doing to help?

- 13 mile section of Hwy 99 in Fresno area identified for FDWS Pilot Program
- System analyzes data from visibility and speed sensors
  - Proxim wireless radio network for device communication in field
  - Wavetronix speed sensors
  - Vaisala visibility sensors
- Messages automatically posted on 39 CMS located within the corridor
  - IMAGO (formerly ADDCO) Changeable Message Signs
  - Cameleon ITS client located in District 6 TMC
- Outreach campaign
  - Produced TV & Radio commercials
  - Created Website – FOG U
  - New CALTRANS brochures for distribution to DMV, Auto Insurance Carriers, local groups
Construction

- Emergency Force Account Contract
- Kiewit Mass Joint Venture for construction
- Constructing in the FOG
- Items Used to reduce cost and schedule
  - Wireless
  - Solar
  - Roadside CMS
ITS Elements
Does it work?

- Algorithm Development
  - Slow process
  - Changing requirements

- System Testing
  - Individual components versus full system
  - How do we simulate low visibility & low speeds?
  - Generating test messages on live system

- System Evaluation
  - How do we measure system success?
  - How many seasons do we need to measure?
FOG Advertising

http://www.foguniversity.com/
Next Steps

Phase II Construction

- Summer installation schedule
- New field elements
  - HAR and RWIS
  - Color CMS
  - Smart EMS or “SEMS”
  - In Pavement Lighting