CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

Memorandum

TO: HONORABLE MAYOR AND CITY COUNCIL

FROM: Robert L. Davis
Darryl Von Raesfeld

SUBJECT: PERCHLORATE FLARES

DATE: January 23, 2008

Approved Deanna Santana Date 1/23/08

RECOMMENDATION

Continue the limited use of electronic flares by the Police and Fire Departments in those circumstances where the use of an electronic flare is practical, such as:

- Small scale deployments
- Closely supervised deployments
- Police Officer or Fire Fighter safety would not be compromised.

BACKGROUND

The purpose of this memorandum is to provide the City Council with information pertaining to the use of fuse and electronic flares by the Police and Fire Departments, and the Department of Transportation (DOT). This memorandum specifically responds to a Council Referral authored by Councilmember Forrest Williams, which the Rules & Open Government Committee directed staff to issue a response as part of the Green Vision Preliminary Implementation Plan.

This memo outlines past efforts to put in place the use of electronic flares and current practices, and mainly focuses on the Police Department's activity since implementation and/or operational issues are impacted most.

ANALYSIS

In early 2005, the San Jose Police Department (SJPD) Research and Development Unit (R & D) proactively conducted a study to determine if the use of electronic flares might be more efficient and beneficial to the Department and the City. The demonstration/pilot program was provided to members of the Traffic Investigations Unit (TIU), Traffic Enforcement Unit (TEU), Research and Development Unit, and members of the Patrol Division. One goal of the pilot program was

to address environmental issues related to the use of fuse flares, but also to learn about any operational issues resulting from the use of electronic flares. The program consisted of the use of PowerFlares, which is a brand name electronic flare, but there are other brand named flares available on the market. The Police Department selected the use of PowerFlares after a competitive procurement process, in which PowerFlares met the specifications outlined in the procurement proposal and offered the most competitive cost. Procurement specifications of particular interest were: compact size to ensure that an adequate supply fit in a police vehicle trunk, durability for multiple uses under regular SJPD scenarios, and high visibility to ensure public safety and appropriate traffic diversion control during incidents.

Pilot Program Evaluation Overview

Most electronic flares are a sealed, self-contained piece of equipment that emits ultra-bright flashing LED lights in a programmable pattern. Electronic flares can be purchased either as a rechargeable or disposable unit. Depending upon the vendor, they are sold in single units or can be purchased in packages of varying numbers.

The results of the pilot program evaluation of the use of electronic flares identified a number of desirable features:

- Rechargeable for repeated use
- Impervious to inclement weather and extreme temperatures
- Highly visible up to ten miles
- Non-burning in hazardous materials situations
- No smoke produced, providing a more clean and smoke-free environment for officers, fire personnel and motorists
- Convenient deployment (on/off switch vs. spark lighting a burning device)

Police/Fire Operational Concerns

Despite the observed benefits listed above, after evaluating a large-scale deployment of the devices with an extended amount of use, Police staff observed problematic conditions that would prohibit a substantial Police and Fire deployment of the electronic flare. Listed below is a discussion of the issues that surfaced:

Fuse Flare vs. Electronic Flare: The typical burning fuse flare is routinely deployed in various patterns for traffic diversion, accident scenes, and major events. These flare patterns can sometimes be very large-scale and are comprised of several dozens, if not boxes of flares, spread out over a very large area. Due to the large scale deployment of the flares, police officers are only periodically able to monitor and/or replace a flare that has burned out.

Theft of Electronic Flares: The theft of a burning fuse flare is virtually non-existent.

With the use of electronic flares, during their deployment, thefts were common, as the electronic flares were easily picked up by slow moving vehicles or pedestrians; they could be easily turned off and stolen from a flare pattern. Because of this, their use and deployment is limited to the Police Traffic Enforcement Unit (TEU), Traffic Investigations Unit (TIU), and the Police Airport Division.

Electronic flares are used in locations where the flares are under direct supervision to avoid thefts. Because of the ease of theft and the high cost of replacement (replacement costs of electronic flares is the same price as new units, with no discount), Police and Fire protocols limits the use of electronic flares to those situations where an Police and Fire personnel can directly supervise its use.

Lack of Equipment Inventory Control & Inefficient Use of Staff Capacity: Aside from thefts, other losses have occurred, as some electronic flares have been inadvertently left at scenes due to Police patrol units changing shifts, or by Police units relieving a specific officer at his/her post. The use of electronic flares requires that a specific flare be assigned to that specific officer and/or patrol unit. This is the standard practice with any piece of Police Department-issued equipment. When an officer or unit is relieved from their post they would then be required to switch out their assigned equipment (i.e. electronic flares) with the relieving unit. For a large event or accident, it would take considerable time to rotate out equipment between patrol units and would create an officer safety concern and result in an ineffective use of an officer's time during an incident.

Police/Fire Department Alternatives

In addition to use of fuse flares and the limited use of electronic flares, both the Police and Fire Department utilize orange traffic cones. These cones are large and are useful for traffic diversion during daylight hours and do not results in the environmental concerns associated with fuse flares. However, due to the size of the traffic cones, only select numbers of Police and Fire vehicles can accommodate their size and they can only be used in daylight or situations where the officer is going to directly supervise their use. Historically, it has been the Police and Fire Department's experience that traffic cones not closely supervised are often vandalized, stolen and/or moved, which negates the original intent of their use. Orange traffic cones also must be collected at the conclusion of their use, which requires Police or Fire Department staff to return to the scene of deployment to collect the cones.

Police/Fire/Department of Transportation Alternatives

There are situations when multiple flares must be utilized to effectively control an intersection or to divert traffic from a critical incident being worked by either Police or Fire. In some situations, a flare pattern must be utilized to provide motorists with a reasonable amount of time to recognize a traffic problem and react and divert appropriately. A motorist should be able to stop before arriving at the collision scene. Obviously, if the roadway is wet or a driver is fatigued or under the influence of alcohol, their reaction time is going to be longer and officers

must keep in mind that the distance between the first flare or cone positioning and the collision scene is dictated by the speed at which the majority of the traffic is traveling. Lastly, if the roadway is wet or the posted speed limit is greater than 45 mph, the safe distance to stop will be greater and in some circumstances may be 1/4 to 1/2 mile away. Nighttime collisions, curves in the roadway, and hills present added safety problems during scene management and officers must consider visibility problems when they create flare patterns.

The Fire Department also recognizes the environmental and safety benefits of electronic flares versus fuse flares, and uses them whenever possible, depending upon circumstances similar to those experienced by the Police Department. The Fire Department expressed that it is neither practical, nor operationally effective, to completely eliminate the use of fuse type flares. The Fire Department further expressed that it must have an inventory of fuse flares for those situations where the use of electronic flares is not practicable (e.g., may be left unattended and risk for being stolen appears likely).

The Department of Transportation (DOT) provides around-the-clock repair and maintenance services on the City's Transportation, Sanitary Sewer, and Storm Sewer infrastructure, and began utilizing alternative devices increase public safety and City employees when performing work in the public right-of-way. In all situations, DOT utilizes adopted traffic control standards and accepted devices. The primary device being used to replace fuse flares, especially at night, has been 36" reflective cones. Other typical devices used include advanced warning signs and flags, stand alone and truck mounted arrow/message boards, lighted barricades, and in certain cases, electronic flares. It should be noted that most lighted traffic control devices being manufactured and purchased for use by DOT utilize low-energy Light Emitting Diode (LED) technology. The Police and Fire Departments can deploy the same tactics but in much more limited uses.

Office of Emergency Services - Grant Purchase of Electronic Flares

Recently, the Urban Area Security Initiative (UASI), through the Office of Emergency Services (OES), purchased 156 electronic flares for use by the Police Department's Airport Division. The Airport will only utilize the electronic flares when they are under the direct supervision of a police officer or other airport personnel, due to the past experience of thefts experienced by the Police Department. As mentioned previously, the use of electronic flares at smaller scale sites, where there is the ability to supervise the flares and control equipment, is operational and easily implemented.

COST ANALYSIS

One of the principle issues pertaining to Police and Fire Department-wide deployment of electronic flares is the significantly higher cost of the devices. Assumed in this cost calculation is the use of PowerFlares, given that the City has recently undergone a competitive procurement process and that PowerFlares met the specifications; however, it should be noted that other brand name electronic flares exist and may result in a different cost analysis.

An approximate cost of an electronic flare is $75 per unit, with each Police patrol vehicle being required to have at least 12 electronic flares. Considering the Police Department's current marked fleet in excess of 400 vehicles, this cost would equate to a one-time purchase of $400,000, not including spares, batteries, or the costs of installation of the charging devices in the Police vehicles. To be prudent, additional electronic flares would be necessary to replace initial losses at an estimated cost of $10,000 (assumes 133 replacement units) totaling $410,000 for the initial purchase. By contrast, the fuse flare costs approximately $27.47 per box of 36 flares. The Police Department routinely purchases approximately 650 to 750 boxes annually, equating to an annual cost of approximately $17,855 - $20,602.

This above cost analysis discussion represents the Police Departments needs only, and additional cost analysis information would be needed from the Fire Department in order to forecast a funding need if the City Council desires to implement a broader use of electronic flares. The above information is provided to illustrate the significant cost disparity between electronic flares and fuse flares and, it should be noted, that larger-scale use of electronic flares could not be implemented without Council approval of a specific funding appropriation to support this initiative. Lastly, the staff costs associated with retrieving electronic flares and installing electronic flares during staff shift changes has not been factored into this cost calculation; but, would impact staff resources available at an incident, which translates into cost.

CONCLUSION

Due to the above factors, the Police and Fire Departments suggest that a large-scale Police/Fire deployment of the electronic flare is not operationally feasible, nor cost effective, at this time. However, both Police and Fire are supportive of the continued utilization of the electronic flares during incidents/situations where it is appropriate.

The Police and Fire Departments recognize the environmental goals and interests of the City of San Jose and the useful service of electronic flares, but the public safety needs of Police and Fire Department and significant cost concerns appear to outweigh a larger deployment of electronic flares at this time. For these reasons, the Administration proposes that the Department of Transportation (DOT) continue its use of a combination of reflectors, lights and safety cones and that the Police and Fire Department continue to utilize electronic flares for limited applications as described in this report.

Additionally, given the City Council's support of the Green Vision and interest in increasing environmentally safe practices within public safety services, the Administration will continue to explore options for the Police and Fire Departments to implement. The City Council has the option to direct staff to return with a budget proposal for broader implementation of electronic flares, under circumstances sensitive to public safety and staffing concerns.

COORDINATION

The memorandum has been coordinated with the Fire Department, Department of Transportation, Office of Emergency Services, and the City Manager's Office.

ROBERT L. DAVIS
Chief of Police

DARRYL VON RAESFELD
Fire Chief

RULES COMMITTEE: 12-12-07
ITEM: G3

CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

Memorandum

TO: RULES & OPEN GOVERNMENT COMMITTEE

FROM: Forrest Williams
Councilmember

SUBJECT: City Council Policy on Flare Usage

DATE: November 30, 2007

Approved Forrest Williams Date 11/30/07

RECOMMENDATION:

It is recommended that the City Council adopt a plan to phase out the use of perchlorate flares by the City's Fire and Police Departments. This plan should be referred to the City Manager for incorporation into the Green Vision work plan to be presented to the City Council in January 2008.

BACKGROUND:

The Police and Fire Departments currently use both perchlorate and electronic flares. However, perchlorate flares are at present used more widely by both departments.

ANALYSIS:

Perchlorate flares pose a threat to the safety and well being of the environment. If these chemical flares are used near bodies of water they can contaminate up to 300,000 gallons. Their residual residue can also get washed into storm drains causing even more pollution. Additionally, perchlorate flares release carcinogenic fumes as a result of their fire. Moreover, chemical flares present a risk of accidental fire and explosion, not only to those who use them but also to those who come near them.

Electronic flares are a safe, cost effective option and pose no threat to the environment. They are reusable and are more visible than traditional chemical flares. Unlike chemical flares, which have a shelf life of one year, electronic flares have rechargeable batteries that last for five years. They are waterproof and have different mounting options (e.g. can be wedged in traffic cones, clipped to personnel/other objects, used on bicycles, etc). Electronic flares are the best known choice for the environment. Adoption of the use of electronic flares for the Police and Fire departments further demonstrates San Jose's commitment to environmental preservation. The San Jose City Council is recommended to discuss and adopt a plan that phases out the use of chemical flares and replaces them with electronic flares.

cc: Lee Price,
City Clerk