Agenda Item: 3

Taxicab Safety Camera Program [INFORMATION AND ACTION]

CITY AND COUNTY OF
SAN FRANCISCO

TAXI COMMISSION
MAYOR GAVIN NEWSOM

COMMISSIONERS TELEPHONE (415) 554-7737

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PATRICIA BRESLIN, VICE PRESIDENT
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R. JAMES SLAUGHTER, ext.4

JORDANNA THIGPEN, ACTING EXECUTIVE DIRECTOR

DATE: May 7, 2008
TO: Honorable Commissioners
FR: Jordanna Thigpen and Scott Leon
RE: Update on Taxi Commission's Safety Camera Program

Taxicab cameras are present in the vehicles to protect drivers and the public. Internationally, cameras have proven to be a great deterrent to crime. The images captured by the camera are not seen by anyone except police in pursuit of a criminal investigation.

This report will provide an update on the Commission's Safety Camera Program and staff recommendations developed in consultation with SFPD.

Outreach

Staff invited all color schemes to come to the May 13, 2008 hearing via a blast fax and encouraged them to attend. One camera manufacturer, Honeywell, will be in attendance to present their product, and one camera manufacturer, Verifeye, cannot attend the meeting but has provided informational materials attached to this memorandum.

Background

In 2002, the Safety Camera Program was initiated by the Taxi Commission. Rule 5.C.34 was promulgated to govern the Safety Camera Program. Rule 5.C.34 provides as follows:

5.C.34 All Taxicabs/Ramped Taxicabs shall be equipped with an approved operational security camera.

(a.) The Executive Director of the Taxi Commission shall develop and mandate standards and specifications for the cameras. A list of approved camera model/systems will be maintained at the Taxi Commission Office.

(b.) All Taxicabs/Ramped Taxicabs shall be equipped with an operational security camera within nine (9) months from the adoption of Rule 5.C.34

(c.) Each Taxicab must post on the exterior of the vehicle,
"VEHICLE EQUIPPED WITH SECURITY," and within the vehicle a notice stating, "THIS VEHICLE IS EQUIPPED WITH CAMERA SECURITY AND ALL OCCUPANTS WILL BE PHOTOGRAPHED."

(d.) The manufacturer of each camera system to be used must agree to provide viewing access of the pictures only to a law enforcement agency (SFPD will agree to use the pictures for criminal investigations only).

The Commission originally identified three vendors from which taxi companies could purchase complying vehicles. Those were Raywood, Silent Witness, and Verifeye. Verifeye is still in business. Silent Witness has been purchased by Honeywell Video Systems (Honeywell.) Raywood is no longer in business.

At a minimum all Raywood cameras must be replaced. Cameras from the other vendors should be upgraded to meet current specifications which have been adopted by other jurisdictions.

At the time the cameras were originally installed, taxicab companies were provided nine months to comply. However, all companies should now have some form of camera installed. Therefore, as the recommendations below detail, taxi companies should have until August 1, 2008 to upgrade existing cameras to the modern specifications or replace them with models from approved vendors.

Research

A survey conducted by Investigator Scott Leon in December 2007, using data from GTU, estimated that 1 in 15 cameras fail when tested. GTU performs a "green light check" on the cameras and does not actually utilize any software to see if images are actually recording. Therefore, the actual failure rate could be much higher due to outdated technology resulting in a failure to record images. There have been 4 complete failures this year in each instance that SFPD Robbery Detail has attempted to obtain the images from the cameras. Staff will have the model and make of the failed cameras at the Commission hearing on May 13, 2008.

There are currently at least eight taxicab companies of varying sizes that used the Raywood camera model. There may be others because several failed to respond to the survey. By May 13, 2008, staff will have an updated total on exactly which companies are using Raywood cameras.

Investigator Scott Leon met with Sgt. Ron Reynolds and Sgt. John Peterson, Officer in Charge of SFPD Robbery Detail, to discuss safety camera issues from the Robbery Detail's standpoint. SFPD has a policy (attached as a Department Bulletin) regarding seizure of taxicabs which have been involved in crimes. Taxi Commission staff will work with SFPD to upgrade this policy to ensure prompt return of medallions to ensure service to the public and driver income. **SFPD's current experience includes as follows:**

- SFPD has the best rate of success in obtaining images from cameras installed in the vehicles of large taxi companies, such as Yellow, DeSoto, and Luxor.
- The success rate of getting a clear photo image after a crime scene, with the current specifications, is about 20%.
- SFPD currently finds Silent Witness Fareview cameras to be the most reliable.
- The memory chips are not sufficiently sized to store the necessary information.
- SFPD finds the lifespan of these cameras to last three to five years maximum.
- SFPD needs images with a higher resolution than current specifications provide.
- Some drivers alter the recording capability of the cameras by turning the lens or covering it with duct tape, preventing the cameras from capturing images in the vehicle. Luckily this appears to be a rare occurrence.

Recommendations:

- **All taxicab companies with vehicles utilizing the Raywood camera must ensure that they replace those cameras with one of the two identified vendors by August 1, 2008.**

- **All other taxicab companies must ensure that vehicles have cameras that meet the new specifications by August 1, 2008. For most companies this will merely involve purchasing chips with a higher storage capacity.**

- **Vendors:**
  - Only two vendors are accepted for use: Verifeye and Honeywell (Silent Witness.)
  - To maintain identification as an acceptable vendor, these vendors must agree to provide certified training on their system and software to taxi company personnel, SFPD personnel, and Taxi Commission staff.
- **System Specifications:**
  - Each system must have a card that can be pulled out and replaced in the event of viewing the images stored on the card. The cards must have a storage range of at least 128 MB.
  - Each image must have a minimum resolution of at least 510x492 pixels and store at least 7,500 images before being overwritten.
  - In general images must be stored for at least 72 hours before being overwritten.
- **Commission Duties:**
  - The Commission should purchase two laptops, one for GTU and one for SFPD Taxi Detail, to facilitate the testing and downloading of images apart from Robbery Detail's ability to download them.
  - The Commission should provide training to SFPD personnel to ensure prompt return of taxicab vehicles and/or medallions involved in a crime, so that a medallion may immediately be returned to the fleet even if the actual taxicab vehicle is not returned immediately.
  - The Commission will work with taxi schools to ensure that drivers are properly trained regarding the cameras.
- **Compliance:**
  - The Taxi Detail ordered in 2003, after the adoption of the 2002 Specifications, that any taxicab without an installed security camera would not be permitted to pick up at the airport. Any vehicle that fails to upgrade a camera and fails to comply with the terms of the Safety Camera Program by August 1, 2008 shall be prevented from picking up at the airport.
- **Rule Change:** A proposed Rule Change is also attached and appears on the Notice Calendar of this Agenda.

Attachments:

- Verifeye product information and letter from sales representative Terry Walker
- SFPD 2003 Department Bulletin regarding taxicab protocol
- Resolution 2008-XX for proposed Rule Change to 5.C.34

"Terry Walker"

05/07/2008 12:53 PM

Please respond to "Terry Walker"

To [illegible]sfgov.org>

cc [illegible]

bcc

Subject TaxiCamera Review

Hi Jordanna,

Unfortunately, we have been unable to reschedule any of the meetings and visits that we had already committed to for next week. As such, I regret that VerifEye will not be able to attend the Commission meeting on the 13th.

I have prepared some information for you that I will send in 2 separate e-mails:

1. TaxiCamera Safety Programs (attached) - this is the message I would have liked to have conveyed to the Commission, had I been able to attend;
2. 2008_Q2_Dealer Prices (attached) - VerifEye's current prices for all our various camera systems;
3. CL letter to J Szekley (attached) - a letter from your opposite number in Seattle that provides statistics on the success of the Seattle camera program;
4. Murder Trial Verdict (attached) - a letter from your opposite number in Seattle that provides specific details of the contribution of images from a TaxiCam in a murder trial;
5. MK IV TaxiCam Presentation (to follow in separate e-mail).

The presentation includes retail (and bulk purchase) pricing for the camera system that I think is most appropriate for San Francisco - the "Dual Camera TaxiCam with 1GB of memory". The presentation also includes retail (and bulk purchase) pricing for a lower cost system that you might also want to consider - the "Single Camera TaxiCam with 512MB of memory.

From the data that is available on the Honeywell Fareview system, it is clear that the largest memory card that they can accommodate is 128 MB. The 128 MB memory card is one quarter the size of the smallest memory card that VerifEye uses - this helps to explain the enormous difference in image quality and the limited number of images. The Honeywell Fareview design is 5 years old and the technology is obsolete - it cannot be supported, let alone upgraded or improved. To the best of my knowledge, no police force in North America finds the image quality or reliability of the Fareview camera to be acceptable - indeed, Vancouver and Toronto have insisted that they be removed as soon as possible.

I would be happy to answer any written questions that the Commission may have on the attached information or to make myself available by telephone.

I would encourage you to contact your opposite numbers in other North American cities such as Chicago, Portland, Seattle etc. to enquire about the specifics of their camera programs.

Regards,

Terry Walker

Vice President Marketing and Sales
VerifEye Technologies

Tel:

m
www.verifeye.com


TaxiCamera Safety Programs.doc


2008_Q2_ Dealer Prices_USA_Protected_with G5 Camera.xls


080411_Murder Trial Verdict.doc


080416_CL letter to J Szekely.doc

TaxiCamera Safety Programs
Lessons Learned

There are seven main characteristics that have been found to significantly increase the effectiveness of TaxiCamera safety programs:

1. **A robust specification** that establishes clear minimum standards for image resolution and quality (in all lighting conditions), together with advanced features such as pre-alarm recording from the emergency trigger and pre-event recording from door and meter triggers. As well as quality of images, quantity of images is also important to ensure the police have the evidence they require to investigate crimes and support prosecutions. With today's technology, the absolute minimum number of images is considered to be 15,000; with 60,000, or more, being desirable. Numerous examples of robust specifications exist (examples include Atlanta, British Columbia, Chicago, Ottawa, Queensland and Toronto).

2. **A single vendor with a proven track record** of selling reliable products to the taxi industry and supporting them through their 5-7 year life-cycle (selected through a competitive tender process). A single vendor can be held accountable for the product integrity, installation quality, and ongoing support, including training of police/inspection staff on the download/inspection software. It is essential that the product, and the associated installation and inspection software, provide features that effectively restrict the deinstallation and reinstallation of cameras to ONLY authorized installation shops.

3. **Careful evaluation of the vendors' proposals and thorough testing of the products** to confirm that they do meet all the specification requirements. Vendors should also be required to guarantee in writing that the product that they sell will be identical in all respects to the "test article" that was submitted for evaluation. **The process followed by the City of Portland in selecting their camera system in 2004 represents "best practice".**

4. **Affordable pricing.** In cities where there is a single vendor, camera system prices are generally significantly lower. The bulk purchase of a thousand or more cameras (and the elimination of dealer mark-ups) will typically reduce the price of a single camera by $150 - $300 (depending upon the specification).

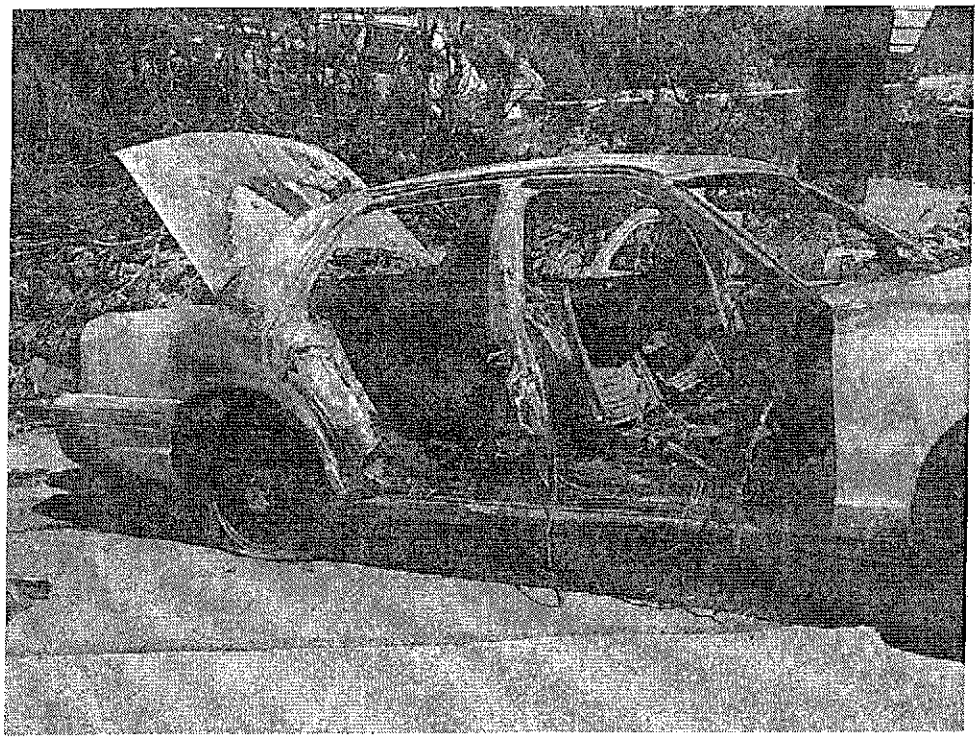
5. **Inspection and enforcement** to ensure the cameras continue to operate properly. Cameras should be inspected immediately after installation, and at least once per year, at a facility equipped with inspection software that will quickly test the aim, image quality and correct triggering of the door, meter and other triggers. The inspection software should also automatically log all occasions when a particular camera system has been inspected – this will "flag" instances where a single camera system is being used on multiple vehicles. A single vendor will eliminate the requirement for multiple inspection software programs (and multiple test procedures) and simplify the training of inspection staff. **Seattle provides an excellent example of "best practices" in terms of their inspection and enforcement – the Seattle police have never reported a missing or non-operational camera.**

6. **Dedicated and properly trained police personnel** to ensure the timely download of images in the event of incidents. The download software must be easy to use while providing security features that will ensure that both "chain-of-evidence" and "privacy" requirements are satisfied. Again, the selection of a single vendor will simplify the training task and ensure the most effective use of the images for evidence purposes. Examples of cities where the police have been particularly proactive include New York City, Portland, Vancouver and Toronto.

7. **Advertising the presence of the cameras** (through window stickers and media campaigns) **and the training of drivers in the use of the emergency button and monitoring of the status light.**

In cities where most, or all, of the above characteristics are present, cameras have proven to be an effective deterrent to criminal activity and they have also contributed to reduced consumer complaints and improved service levels. It is not unusual for the numbers of all incidents to fall by 75-80%; the most effective programs report fewer than 2 incidents per 100 cabs per year.

The most recently published statistics, on the effectiveness of TaxiCameras in reducing crime, come from Seattle. In Seattle, the number of serious crimes declined by 78% in the first full year of the Seattle camera program (when compared to the average number of serious crimes per year over the five years preceding the introduction of cameras). In Seattle, there is a single vendor and three authorized installation shops who are held jointly accountable for ensuring that 100% of the cameras are working at all times. Inspections are carried out twice a year by the City of Seattle Department of Consumer Affairs at their inspection facility.



The ruggedness and reliability of the Seattle cameras was proven recently when 28 images were recovered from the camera unit in the vehicle shown above. The images were shown at the trial of the individual who had been charged with murdering the taxi driver and attempting to destroy the evidence by burning the vehicle. The images were a key element of the prosecution's case and resulted in a guilty verdict on the charge of first degree murder.

2008 Q2
Dealer Pricing
(North America)

	MK IV Single Cam	MK IV$_{GPS}$ Dual Cam	MK IV$_{GPS}$ Dual Cam	MK IV$_{GPS}$ G5 Dual Cam	MK IV$_{GPS}$ Dual Cam	MK IV$_{GPS}$ Dual Cam + Road View Cam	TSCS Dual Cam + External cam
	Continuous Capture/ Pre-Alarm with Event Triggered Recording	Continuous Capture/ Pre-Alarm with Event Triggered Recording	Continuous Capture/ Pre-Alarm with Event Triggered Recording	Continuous Capture/ Pre-Alarm with Event Triggered Recording	Continuous Capture/ Pre-Alarm with Event Triggered Recording	Continuous Capture/ Pre-Alarm with Event Triggered Recording	Continuous Capture/ Pre-Alarm with Event Triggered Recording
Cameras	1 (3.6mm) LS*	2 (5.5mm) LS*	2 (5.5mm) LS*	2 (4.3mm) LS*	2 (5.5mm) LS*	2 (5.5mm) LS* + 1 (5.5mm) LS*	2 (5.5mm) LS* + 1 (4.0mm) LS*
Memory Size (MB)	512	1024	2048	2048	4096	2048	2048
Pre-Alarm Buffer (MB)	64	64	64	64	64	64	128
Image Storage (MB)	448	960	1984	1984	4032	1984	1920
Memory Type	Industrial CF card	Industrial CF card	Industrial CF card	Industrial CF card	Industrial CF card	Industrial CF card	Industrial CF card
Memory Location	Standard Controller	Standard Controller	Standard Controller	Standard Controller	Standard Controller	Standard Controller	Separate memory module in fireproof/waterproof enclosure
Displayed Resolution (per lens)	720 x 576	720 x 576	720 x 576	720 x 576	720 x 576	720 x 576	720 x 576
Image Compression	8x	8x	8x	8x	8x	8x	8x
Number of Images	17,500	37,500	77,500	77,500	157,500	77,500	75,000
Maximum Aggregate Frame Rate***	9fps	9fps	9fps	9fps	9fps	9fps	9fps
Maximum Camera Frame Rate***	9fps	4.5fps	4.5fps	4.5fps	4.5fps	3fps	3fps
GPS	N/A	Dealer Option	Dealer Option	Dealer Option	Dealer Option	Dealer Option	YES
Warranty	1 year	1 year	1 year	1 year	1 year	1 year	1 year
Dealer Price Per System:							
Implied retail margin at 1000-off dealer price	20.27%	21.95%	22.08%	22.88%	21.58%	21.35%	21.43%
Retail Price							
10 systems	$740.00	$1,025.00	$1,155.00	$1,180.00	$1,390.00	$1,335.00	$2,100.00
100 systems	$690.00	$950.00	$1,070.00	$1,090.00	$1,290.00	$1,240.00	$1,950.00
1000 systems	$640.00	$875.00	$985.00	$1,000.00	$1,190.00	$1,145.00	$1,800.00
	$590.00	$800.00	$900.00	$910.00	$1,090.00	$1,050.00	$1,650.00
Standard price difference between volume levels	$50.00	$75.00	$85.00	$90.00	$100.00	$95.00	$150.00
G-Trigger Option	N/A	$95.00	$95.00	$95.00	$95.00	$95.00	$95.00
GPS Option	N/A	$105.00	$105.00	$105.00	$105.00	$105.00	Included
Dealer Price Per Licence:							
Installer Software & HASP Key	$1,000.00	$1,000.00	$1,000.00	$1,000.00	$1,000.00	$1,000.00	$1,000.00
Inspector Software	$500.00	$500.00	$500.00	$500.00	$500.00	$500.00	$500.00
Viewing Software & HASP Key**	$1,500.00	$1,500.00	$1,500.00	$1,500.00	$1,500.00	$1,500.00	$1,500.00
GPS Mapping Software	N/A	$500.00	$500.00	$500.00	$500.00	$500.00	$500.00
	New York Spec. Seattle Spec.	BC Spec. Chicago Spec. Toronto Spec Portland Spec	Vancouver Spec.	Vancouver Spec.	Ottawa Spec.	LA Spec.	Australia Spec.

* Light sensor. Required in cameras that have "continuous capture" and "pre-alarm".

** Provided subject to approval by local law enforcement and regulatory agencies.

*** Max aggregate frame rate is 9fps for units with industrial flash and light sensor cameras.
Maximum camera frame rate is max aggregate frame rate divided by the number of cameras.

All Prices are FOB Toronto in US Dollars and exclude handling, shipping, insurance and taxes.

----- Original Message -----
From: "Craig Leisy"
To: "Terry Walke"

Sent: Friday, April 11, 2008 6:12 PM
Subject: UPDATE - MURDER TRIAL

Terry, Peter:

FYI. I sent this to our taxicab association general managers.

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Taxicab Association Representatives:

PLEASE PASS TO YOUR AFFILIATED DRIVERS AND OWNERS.

Various television reporters conducted on-camera interviews of Sikh taxicab drivers present at 9:00 a.m. this morning (4/11 Fri) in Room 762E of King County Superior Court (Judge Chris Washington) for the reading of the verdict of the jury in the aggravated murder trial of Earnest Lenell Collins (age 19) who was charged with killing and burning Jagjit Singh, the driver of Farwest 119 (a city-county dual-licensed taxicab) in Seatac, WA on July 10, 2007. The jury found the defendant guilty in all changes - first degree murder, premeditated, aggravated, with a weapon, and involving arson. Sentencing is scheduled for May 9 at 9:00 a.m. in the same courtroom.

There were about 25 Sikh drivers present. During the past 2 weeks of witness testimony there were always a small group of drivers present in the courtroom. The drivers interviewed said that they thought "justice was served" and they said they were present out of respect for Jagjit Singh's wife and child who live in India.

During the trial there were several prosecutor exhibits showing enlargements of images of the defendant in the taxicab and committing the crime that were taken by the taxicab security camera. The images showed the weapon (a handgun that was never recovered) and the fire being started (the fire investigator did a test burn to confirm a theory that a road flare was used to start the fire). The defendant's face was clearly visible in the taxicab even though it was dark (3:45 a.m.) because of the infrared LEDs that illuminate every still B&W image taken by the digital camera system. When the defendant opened the taxicab door to get in he unknowingly triggered a series of images and they were recorded in digital memory in a controller unit secreted under the dash. With the help of Surinder Gill (Gill's Auto Repair), the controller unit was salvaged and sent to the FBI Lab in Quantico, VA. From there it was taken to the camera manufacturer VerifEye Technologies located near Toronto, Canada. Representatives from both groups

testified in the trial. Seattle taxicab inspector Tim Guice also testified about his periodic inspections and tests of the camera system in Farwest 119 and explained the installation and inspection reports and test images in our files.

There was quite a bit of evidence including driver DNA (blood) on a shirt found in the home where the defendant lived. However, it was very clear that the camera images were the key evidence since the prosecution emphasized them in their closing arguments on Wednesday.

The security cameras installed in Seattle taxicabs have been very effective in deterring premeditated taxicab crimes (e.g., armed and strong arm robberies) - these crimes were deterred by 64% when comparing before camera robbery crime averages during 2000-2005 and after camera robbery crime averages 2006-2007. In addition, this murder trial highlights the importance of security cameras in arresting and convicting suspects.

****

I think that you produce a great digital security camera system and your staff did a miraculous job salvaging the images from the destroyed controller unit. I sat through the 2+ weeks of the witness testimony in the murder trial and the camera images seemed dramatic and persuasive evidence - way more impressive than DNA or any physical evidence. The prosecutors camera images were shown over and over again to witnesses and the jury and featured large in their closing arguments. Congratulations on your role in helping make sure that "justice was served" as the taxicab drivers told the tv reporters.

I intend to work with our media specialists to publicize the remarkable effectiveness of the cameras in both preventing crimes (see above) and solving and punishing crimes against taxicab drivers. I will make sure that you receive a copy of the final news release.

Your company should feel very good about the product you sell - it has saved a lot of drivers from robberies and brought justice for the crimes not prevented. Congratulations!

Craig

Craig Leisy
Manager
Consumer Affairs Unit
805 South Dearborn Street
Seattle, WA 98134
(206) 386-1296

-----Original Message-----
From: Craig Leisy [mailto:Craig.Leisy@Seattle.Gov]
Sent: Wednesday, April 16, 2008 9:37 PM
To:
Subject: Re: Fwd: [ozcabs] Digest Number 3047

Jim:

Hello.

I've been getting some emails from you recently. I think that there has been some real significant advances in driver personal safety due to the spread of security camera systems in many large cities in the U.S. and Canada. For example, in Seattle, the number of premeditated crimes (armed robberies and strong arm robberies) were reduced 64% in the past 2 years after cameras were installed. 2007 was the first full year of cameras and the reduction was 78% - quite dramatic. See below:

CRIME PREVENTION BY TAXICAB SECURITY CAMERAS
Taxicab Crime. Crimes against taxicab drivers declined since the installation of security cameras was completed in March 2006 which demonstrates the effectiveness of cameras in deterring crime. For example, taxicab robberies during the 6 year period 2000-2005 (prior to installation of security cameras) averaged 9.3 "armed" robberies and 4.5 "strong arm" robberies for a combined 13.8 total robberies. However, robberies during the 2 year period 2006-2007 (after security cameras were installed) dropped to averaged 2.0 "armed" and 3.0 "strong arm" for a combined 5.0 robberies. This represents a reduction in premeditated crimes against drivers of about 64% comparing the before and after periods. The actual decline for 2007 alone, the first full year after cameras were installed, compared with the 6 year pre-camera period was even more dramatic at 78%. Assaults have also declined but they are usually not premeditated and often involve alcohol or drugs.

Of course, cameras are also very effective at identifying suspects for arrest and prosecution. More than 90% of crimes against taxicab drivers occur at night making identification by drivers very difficult. Recently, I observed the murder trial of the killer of a Seattle taxicab driver. See below:

RECENT TAXICAB DRIVER MURDER CONVICTION
Aggravated Murder Trial. Various television reporters conducted on-camera interviews of Sikh taxicab drivers present at 9:00 a.m. on Fri 4/11 in Room 762E of King County Superior Court (Judge Chris Washington) for the reading of the verdict of the jury in the aggravated murder trial of Earnest Lenell Collins (age 19) who was charged with killing and burning Jagjit Singh, the

driver of Farwest 119 (a city-county dual-licensed taxicab) in Seatac, WA on July 10, 2007. The jury found the defendent guilty in all changes - first degree murder, premeditated, aggravated, with a weapon, and involving arson. Sentencing is scheduled for May 9 at 9:00 a.m. in the same courtroom. There were about 25 Sikh drivers present. During the past 2 weeks of witness testimony there were always a small group of drivers present in the courtroom. The drivers interviewed said that they thought "justice was served" and they said they were present out of respect for Jagjit Singh's wife and child who live in India.

During the trial there were several prosecutor exhibits showing enlargements of images of the defendent in the taxicab and committing the crime that were taken by the taxicab security camera. The images showed the weapon (a handgun that was never recovered) and the fire being started (the fire investigator did a test burn to confirm a theory that a road flare was used to start the fire). The defendent's face was clearly visible in the taxicab even though it was dark (3:45 a.m.) because of the infrared LEDs that illuminate every still B&W image taken by the digital camera system. When the defendent opened the taxicab door to get in he unknowingly triggered a series of images and they were recorded in digital memory in a controller unit secreted under the dash. With the help of Surinder Gill (Gill's Auto Repair), the controller unit was salvaged and sent to the FBI Lab in Quantico, VA. From there it was taken to the camera manufacturer VerifEye Technologies located near Toronto, Canada. Representatives from both groups testified in the trial. Seattle taxicab inspector Tim Guice also testified about his periodic inspections and tests of the camera system in Farwest 119 and explained the installation and inspection reports and test images in our files.

http://www.komotv.com/news/local/17554654.html
http://www.king5.com/topstories/stories/NW_041108WAB_singh_taxi_murder_guilty_verdict_TP.53812251.html#
http://seattlepi.nwsource.com/local/6420ap_wa_taxi_killing.html
http://seattletimes.nwsource.com/cgi-bin/PrintStory.pl?document_id=200434227 0&zsection_id=2003925728&slug=webcollins11m&date=20080411
http://seattlepi.nwsource.com/printer2/index.asp?ploc=t&refer=http://seattle pi.nwsource.com/local/358710_taxislaying12.html

Feel free to use this information in your research. I feel I must take issue with a couple things I saw on Rathbone's driver safety web site: (1) contrary to a quote by a police office that partitions are more effective than cameras because the partitions prevent the crime - my research indicates that partitions reduce but don't prevent crime and that cameras are also very effective in preventing preventable (premeditated) crime. (2) contrary to a statement I read, the "Baltimore study" didn't prove that only partitions prevent murders - quite the opposite. The study data demonstrate that murders continued at the same level unabated after installation of partitions thereby proving that partitions are not effective in presenting

murders. It is ironic that high profile crimes like taxicab driver murders often lead to laws requiring partitions or cameras but neither technology will prevent murders (nothing can) - they both can and do reduce robberies and assaults.

We hope to re-authorize cameras in Seattle before the sunset date in 2009. We have learned from the past two years and will probably propose some changes to our rule containing the technical requirements in order to expand memory capacity and add some of the latest innovations like electric eyes that evaluate the need for infrared LED flashes in order to extend the life of cameras and programming that gives a "video" look to still images or is backward looking from a crime event.

We would be happy to anything you have learned about taxicab driver personal safety initiatives that might enhance driver safety. In 2005 our driver safety ordinance required GPS, cameras, silent alarms and more driver training plus authority to refuse suspicious trips and improved dispatching to avoid pick ups unless the street address is known, etc.

Have a good day.

Craig

Craig Leisy
Manager
Consumer Affairs Unit
805 South Dearborn Street
Seattle, WA 98134

www.cityofseattle.net/consumeraffairs
www.cityofseattle.net/consumerprotection

>> '2008 5:40 PM >>>

Overview of Recent Advances
in
In-Vehicle Camera Technology

Camera's in Taxi's

Primary purpose

Deterrent to violent crime against drivers

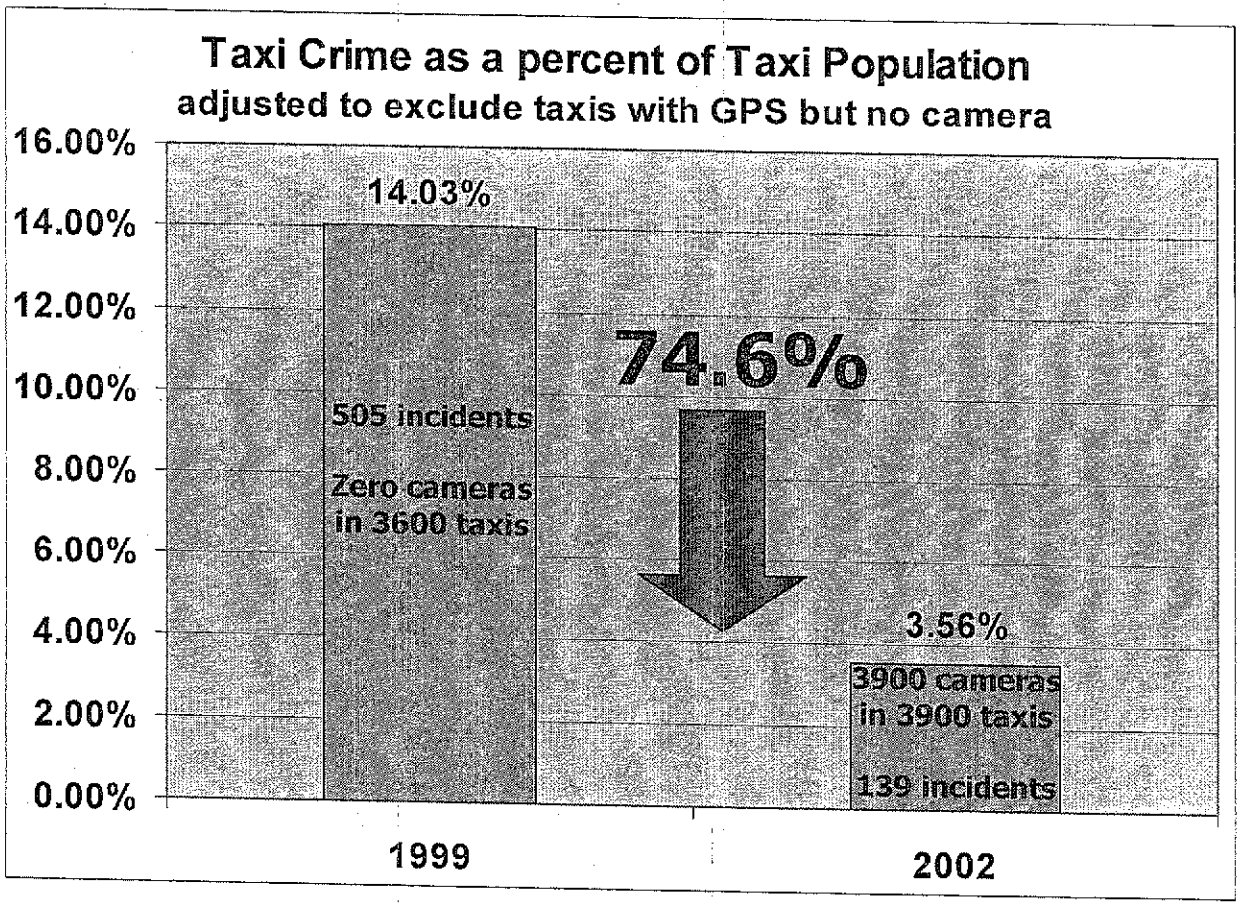
The deterrent value of any camera is based on the assumption that the would-be criminal is aware of its presence. The cameras are therefore non-covert and information stickers provide an appropriate message to the public.

Secondary purpose

Source of evidence for criminal investigation and prosecution

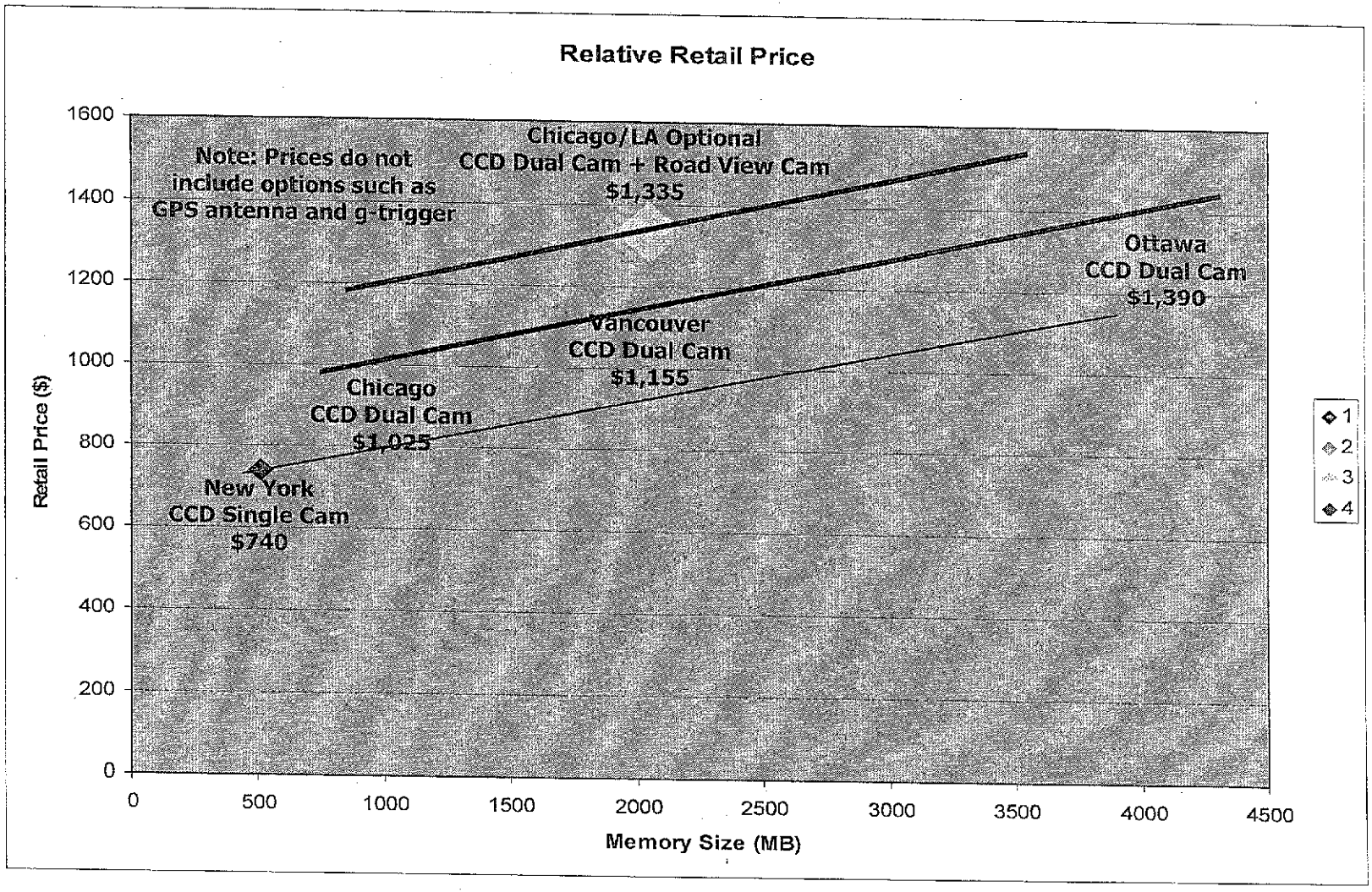
The deterrent value would be undermined if the system were known to be non-functional (e.g. dummy camera) or ineffective. The design requirement stresses high reliability and data integrity.

Toronto Safety Camera Program Effectiveness Statistics



2002 is the last year for which statistics of specific crimes against taxi drivers are available

TaxiCam Retail Prices



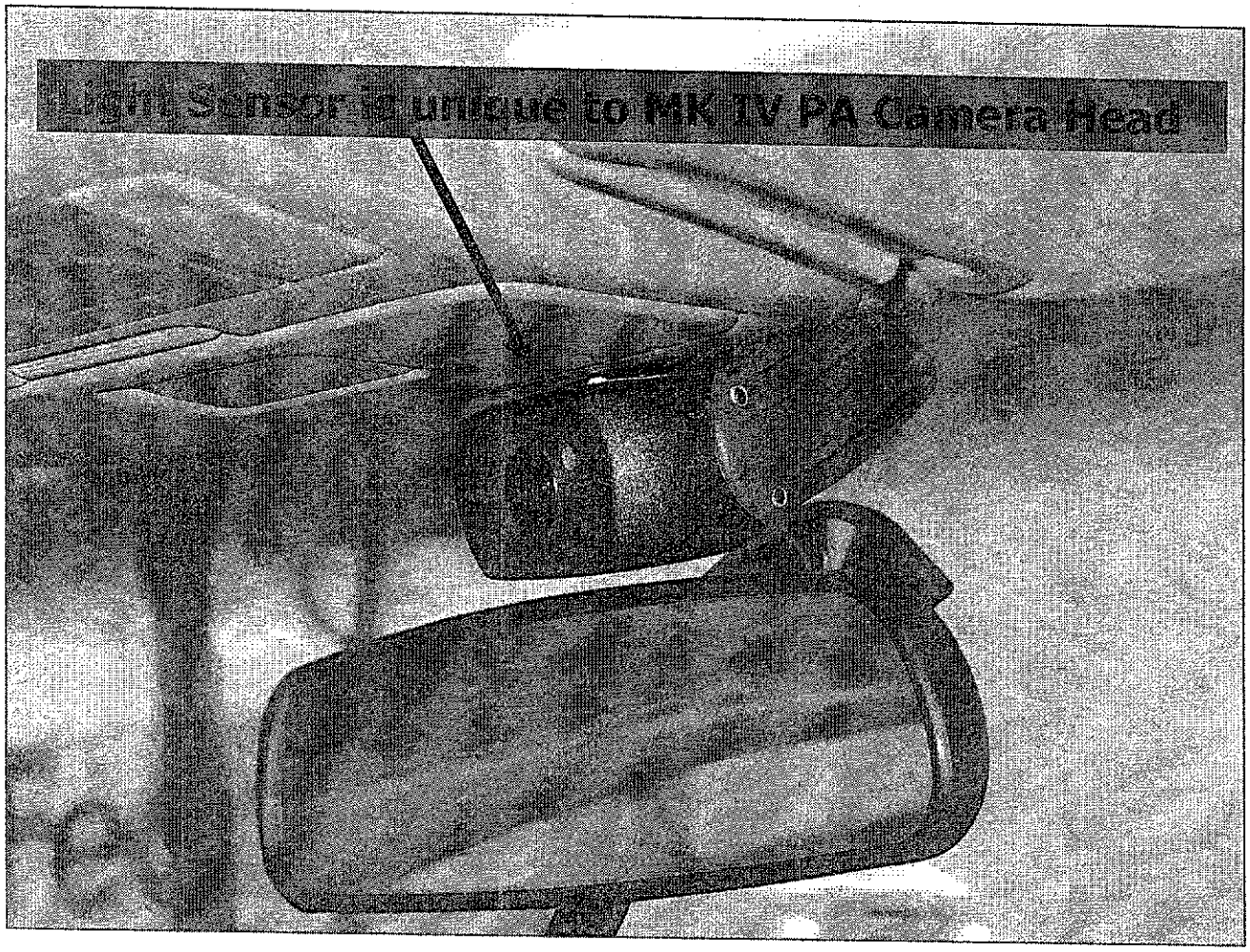
MK IV Single Cam (Pre-Alarm) TaxiCam Kit

Retail Price: $740
Bulk Purchase Price: $590
(Quantity = 1000 units)

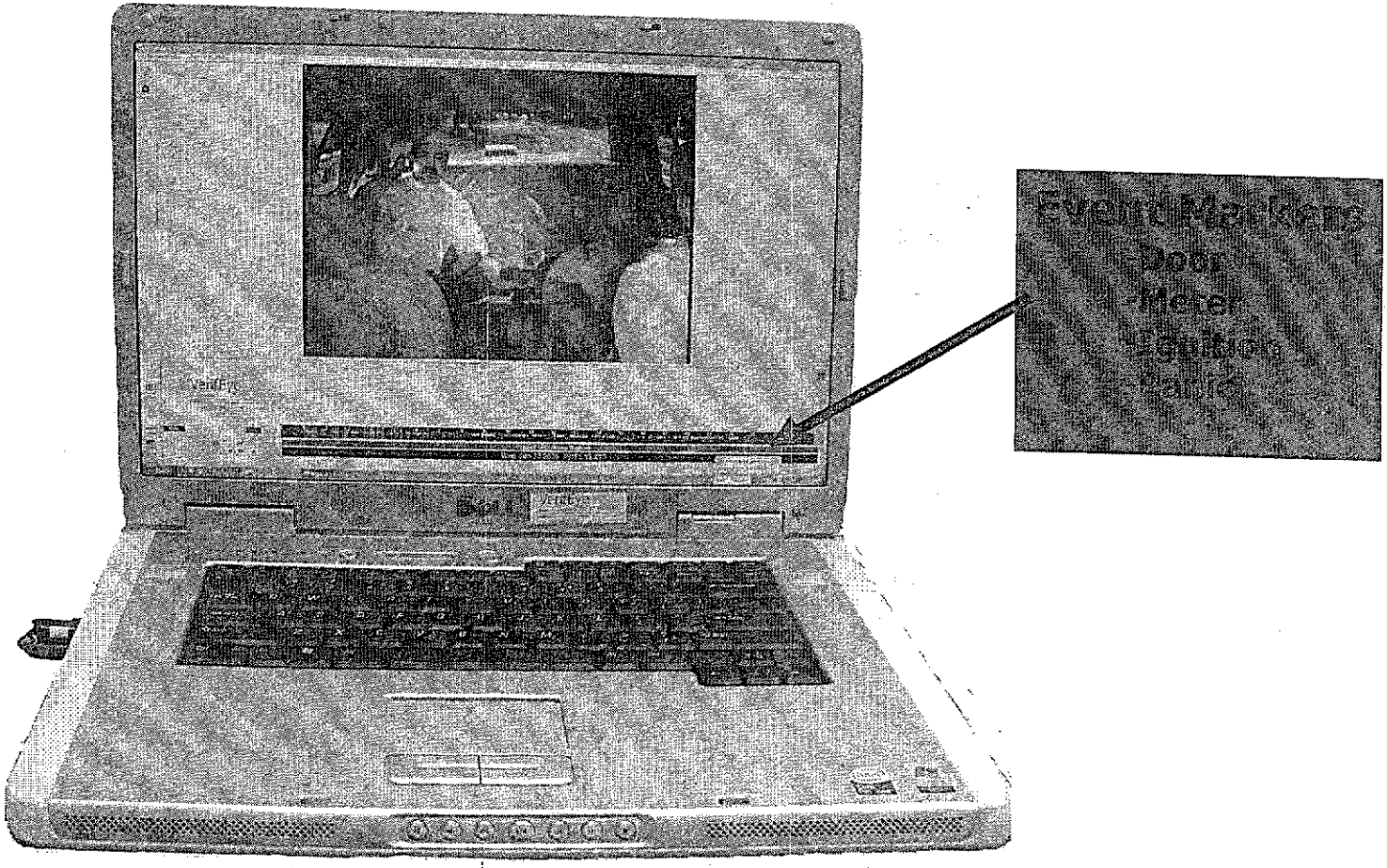
512MB Industrial Flash Memory
17,500 images
Pre-alarm (2.5 minutes before event)

As used in:
- New York City
- Seattle

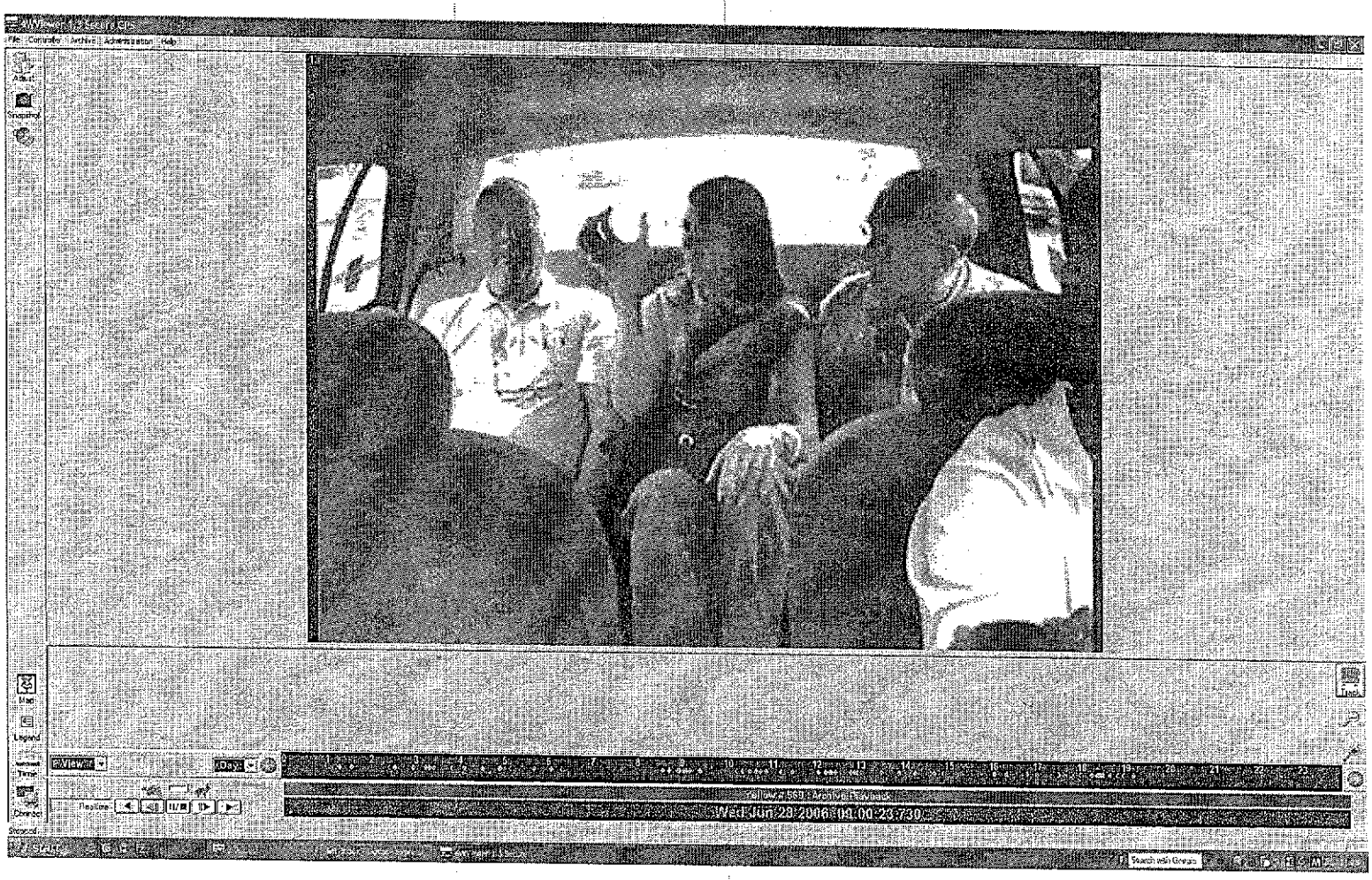
MK IV Single Cam (Pre-Alarm) Camera Head Installation



VerifEye Viewer

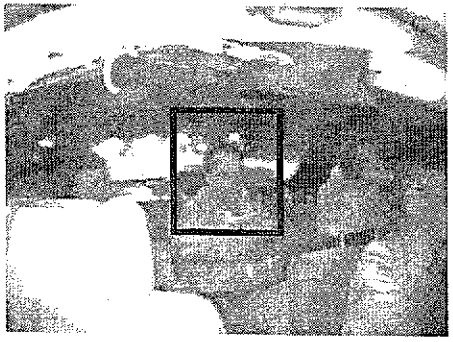


Single Camera Imaging
Day Shot



Single Camera Imaging
Night Shot

Dual Camera – Night Shot



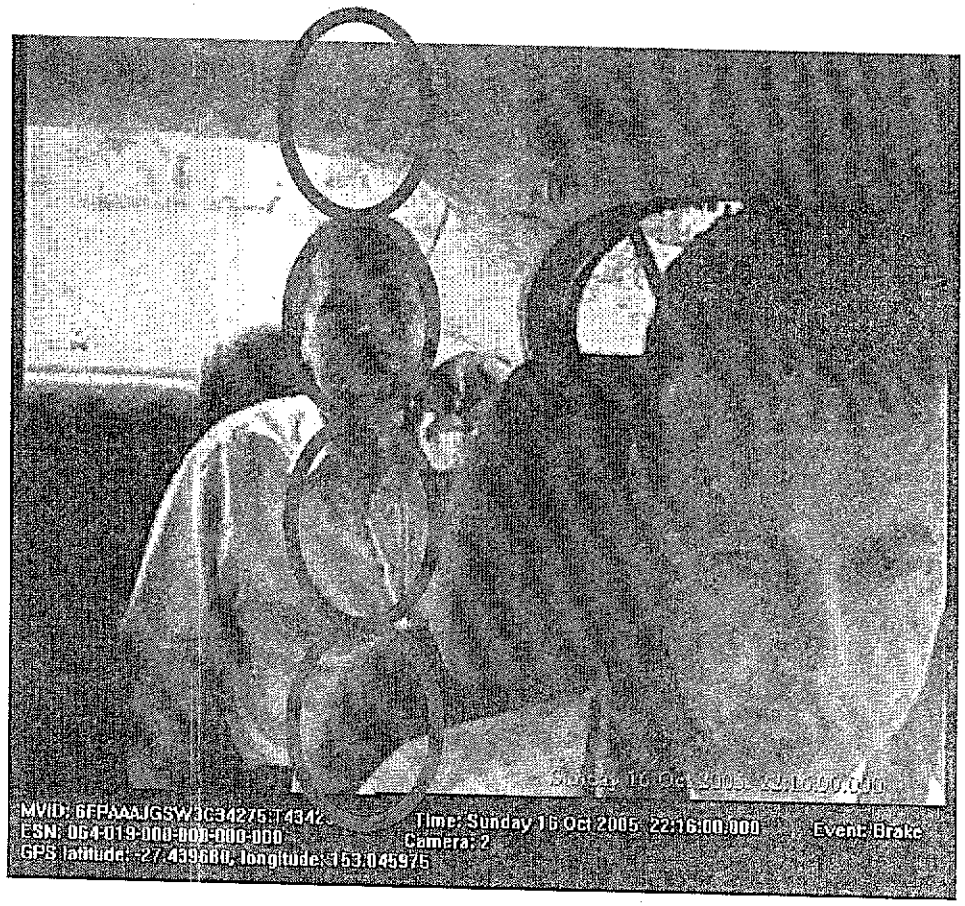
MK III – Resolution 256 x 256

MK IV Dual Cam – Resolution 2 x 720 x 576

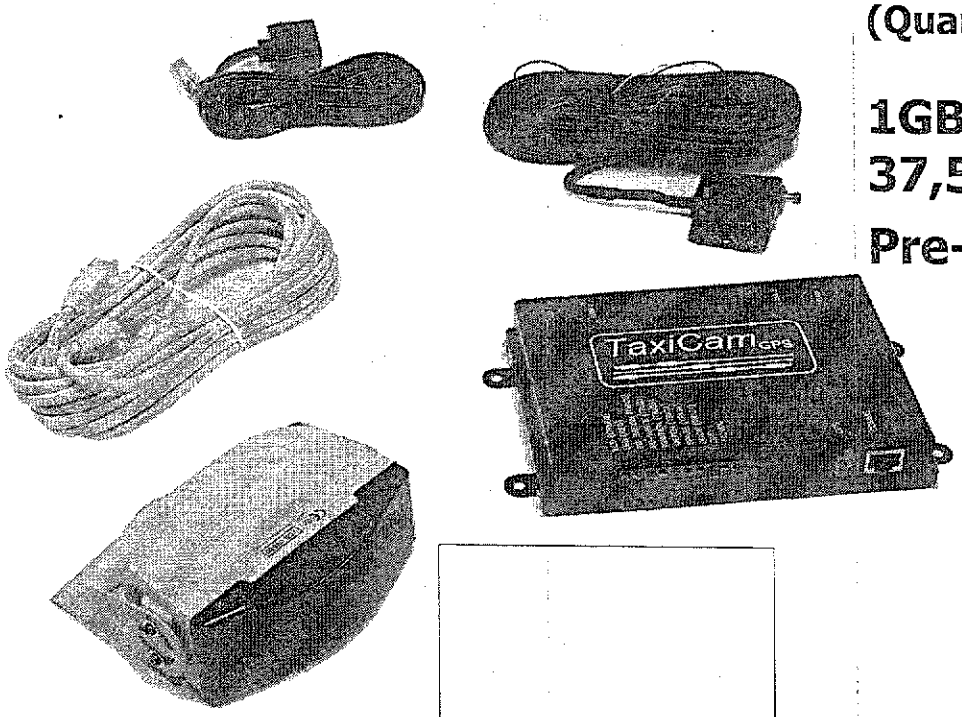
Note: Honeywell Fareview resolution was considered inferior to TaxiCam MK III

Dual Camera Image – LHS Camera

- Images of rear seat occupants will be 50% larger than those taken with 3.6mm single cam.
- An average person's face will occupy 25% of elevation field of view.



MK IV Dual Cam (Pre-Alarm) TaxiCam Kit



Retail Price: $1,025
Bulk Purchase Price: $800
(Quantity = 1000 units)

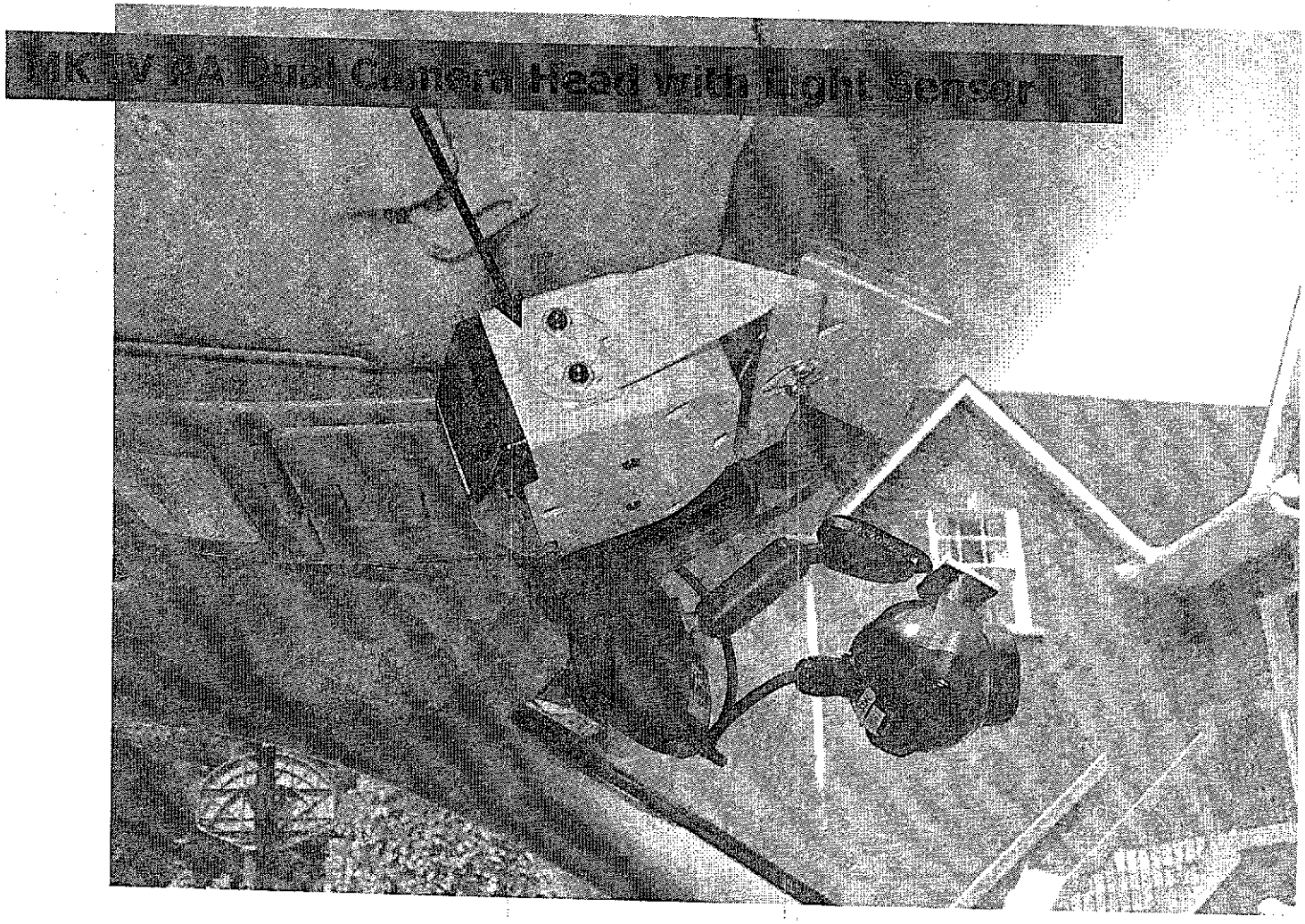
1GB Industrial Flash Memory
37,500 images

Pre-alarm (2.5 minutes before event)

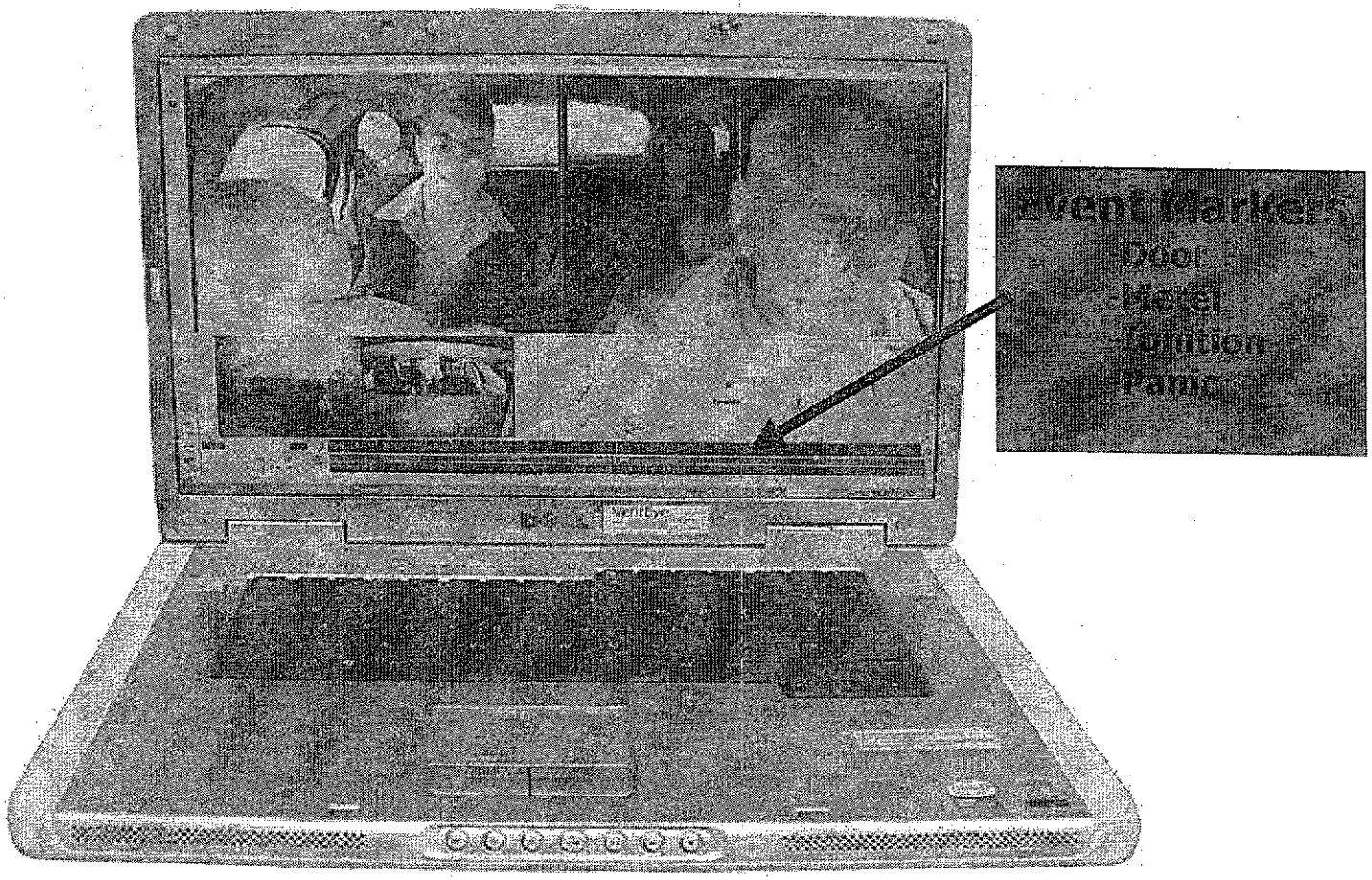
As used in:

- Chicago
- Toronto
- Windsor
- Calgary
- Edmonton
- British Columbia

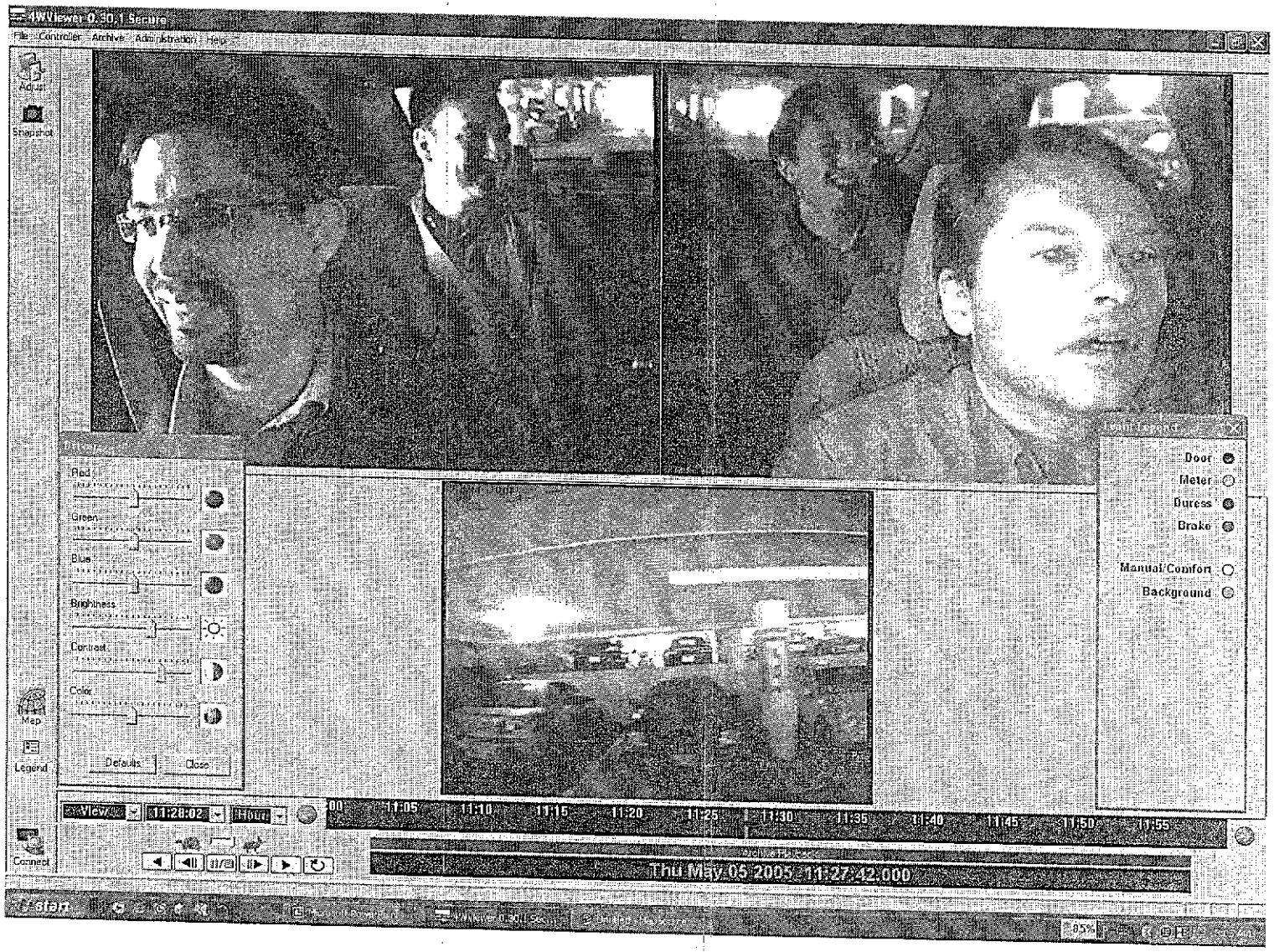
MK IV Dual Cam (Pre-Alarm) Camera Head Installation



VerifEye Viewer



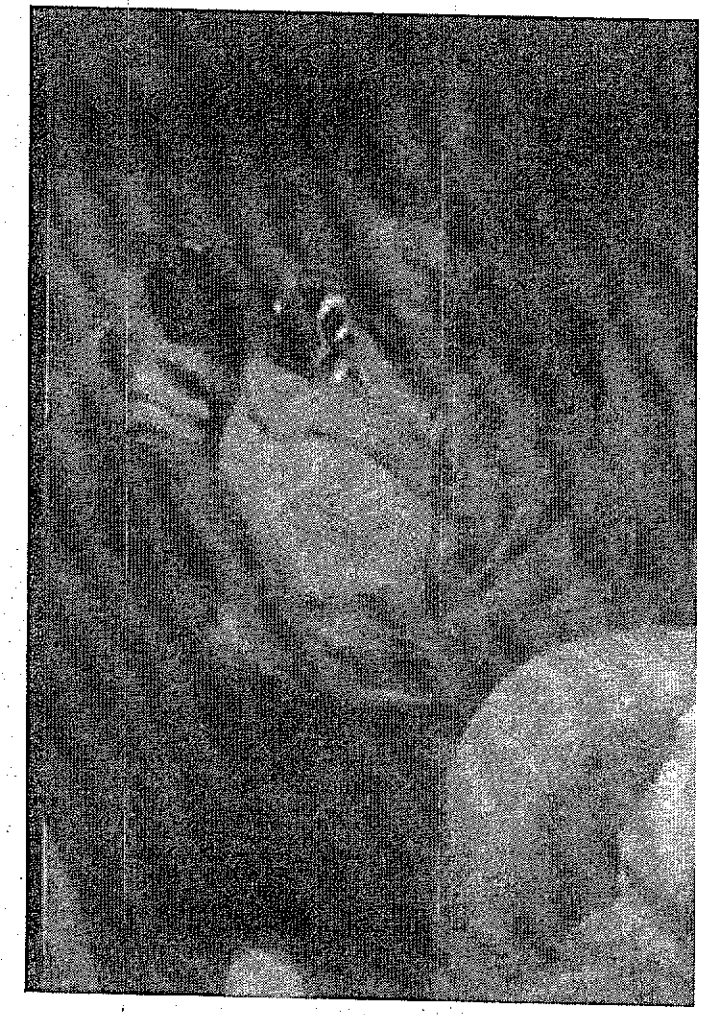
3 Camera Imaging



4 Camera Imaging

with GPS Mapping

Suspects arrested 20 Nov 2006
4 days after pictures posted

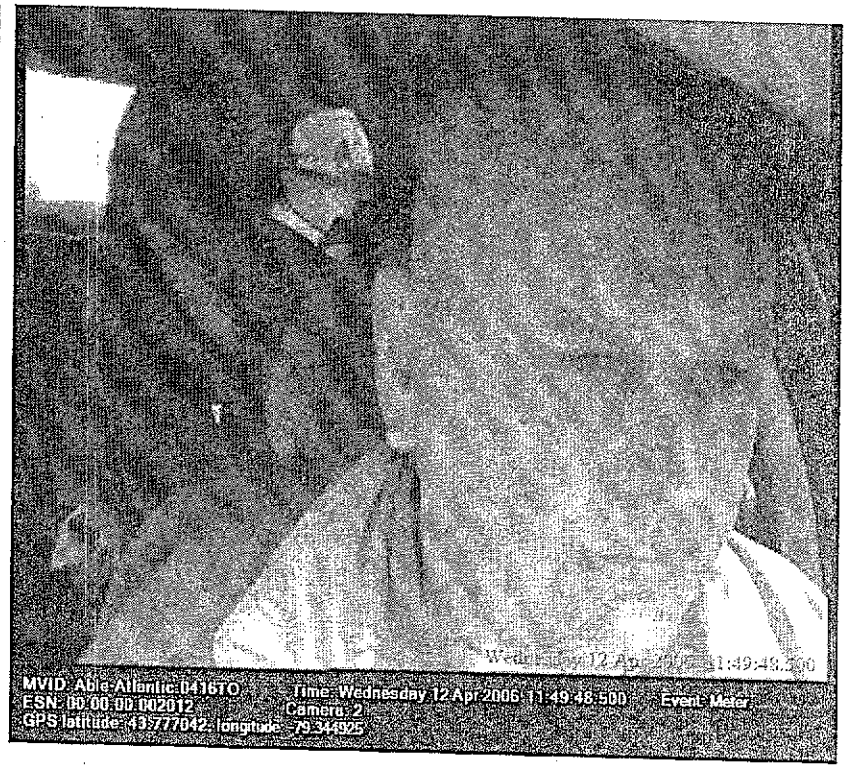


Suspects arrested 20 Nov 2006
4 days after pictures posted

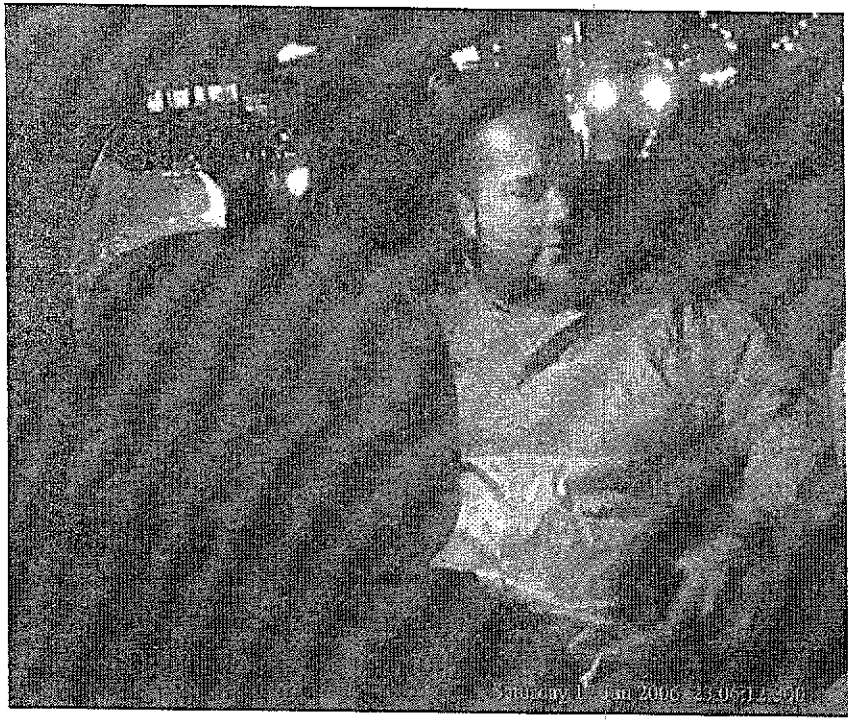
Suspects arrested 20 Nov 2006
4 days after pictures posted

Suspects arrested 20 Nov 2006
4 days after pictures posted

Example of an exported jpg images



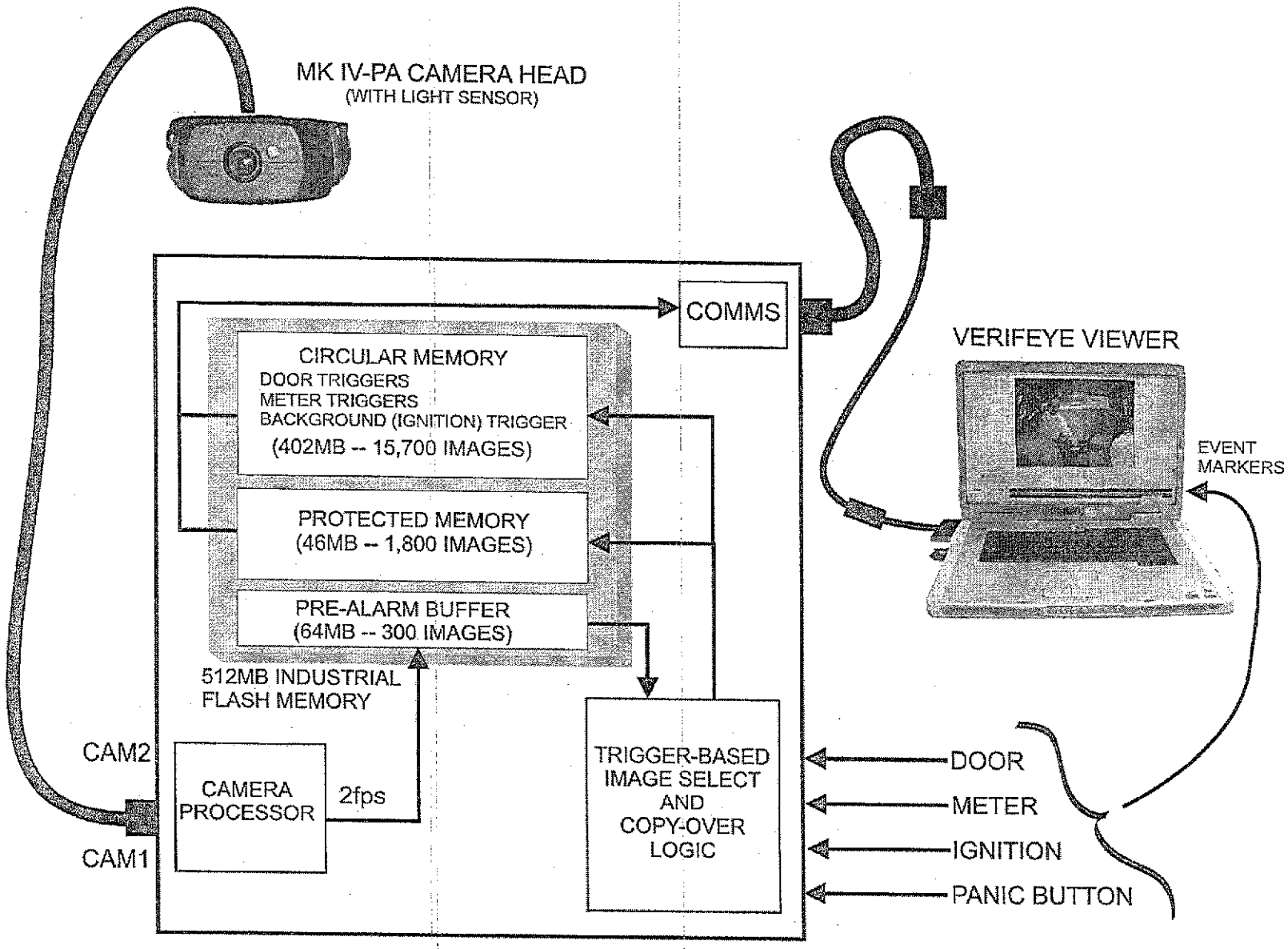
Night Time Images
with metadata removed



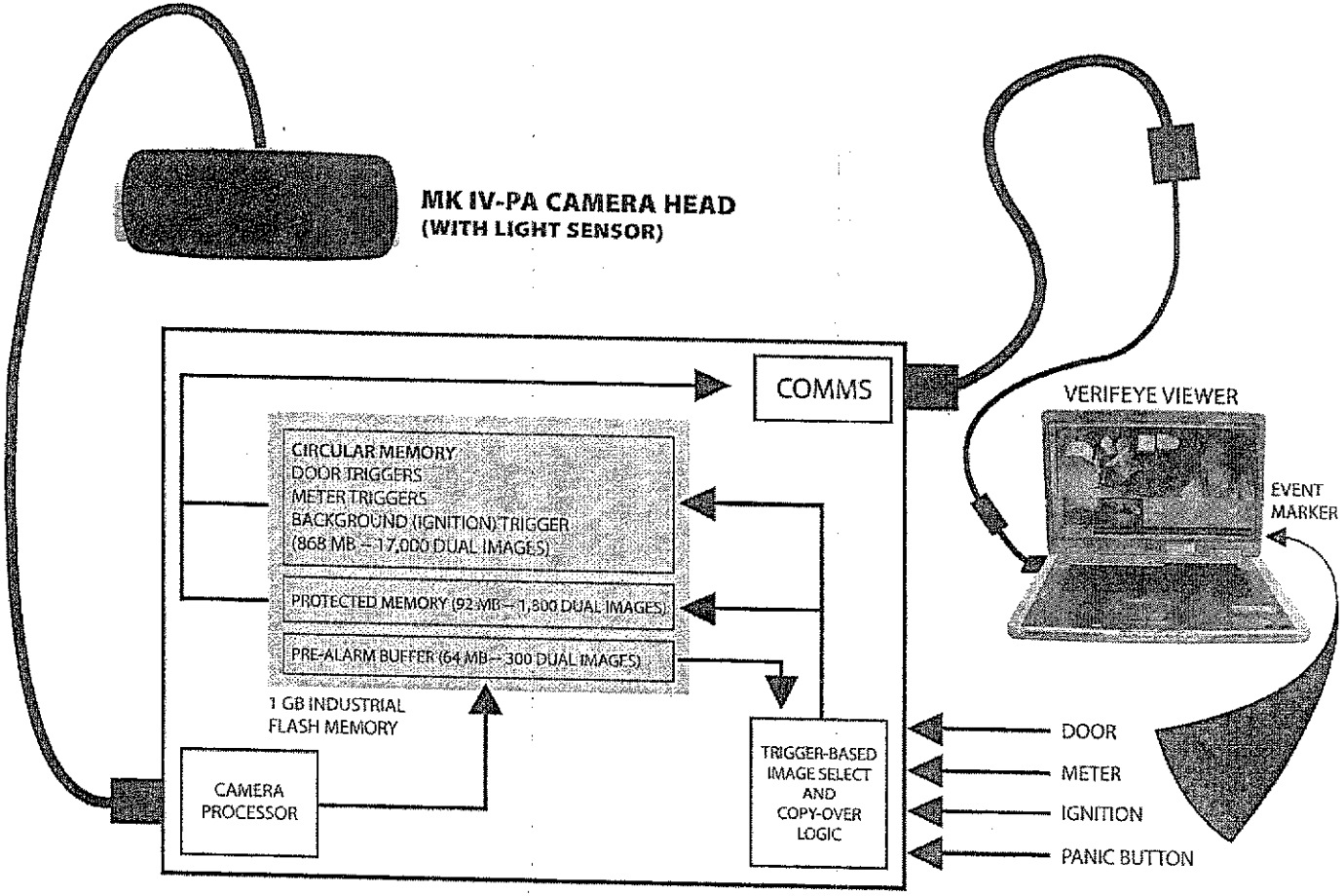
How does TaxiCam work?

- **The camera is monochrome with IR illumination to ensure optimal day/night performance.**
- **The camera can be activated by any normal operation that occurs in a taxi:**
  - door (opening)
  - meter (on and off)
  - manual emergency button
  - G-force
- **The "controller" then begins to store images in non-volatile flash memory:**
  - in New York there are an average of 73 images per 10-minute fare and the memory has been sized to provide 4 days of images before wrapping around.
- **The "controller" is hidden in the vehicle.**
- **Images can only be accessed through a personal computer using VerifEye's proprietary software and a security (HASP) key.**

MK IV Single Cam (Pre-Alarm) Memory Allocation



MK IV Dual Cam (Pre-Alarm) Memory Allocation



What Sets TaxiCam Apart

- **Image quality**
  - Single Cam or Dual Cam
    - "Best-in-class" resolution (720x576 pixels)
    - "Best-in-class" LED illumination (better night shots)
    - Light sensor and current management (smart head) to extend camera life
  - Exterior camera
    - Excellent imaging sensor with light activated LED's
- **Image capacity**
  - Expandable memory (up to 600,000 images) without hardware upgrades
- **Flexible design**
  - 4 camera capable
  - Pre-Alarm option - image buffer at 1 or 2fps per camera (typical) (9 fps max for 1 camera)
  - Fireproof/waterproof memory module option
  - G-force trigger
  - GPS
  - Audio
  - Compact design easily installed and maintained
- **Fast and easy download to minimize downtime**
- **Exceptional security to prevent unauthorized access and to protect public privacy**

TaxiCam Inspection, Enforcement and Privacy/Chain of Evidence Provisions

Control is achieved at 3 levels:

Installer – HArdware-Based Software Protection (HASP) keys issued only to Authorized Installers[1]

Inspector – inspector software provides tools to enable verification that a camera is fully functional, that it is properly configured for that jurisdiction, that *both* the camera and controller serial numbers "belong" to that vehicle and that the installation was carried out by an authorized installer.

Viewer - HASP keys issued only to Authorized Law Enforcement Personnel[2]

1 Installer HASP key is colour coded red and cannot access viewer software
2 Viewer HASP key is colour coded green and can only access viewer software and downlaod images from that jurisdiction.

TaxiCam Privacy Features

TaxiCam was designed from the outset with controlled image access as a priority – not an afterthought.

Images cannot be transferred from the black box or from the removable flash card to a computer except by authorized persons. This is ensured through the following measures:

- The TaxiCam **communication protocol** is proprietary to VerifEye. The comms driver is embedded in the VerifEye software applications and would be extremely difficult to reverse-engineer.
- TaxiCam images are recorded in a **compressed format**. The compression technique is proprietary to VerifEye and the decompression algorithm is embedded in the VerifEye software applications. Again, to reverse-engineer would be virtually impossible.
- VerifEye **files are encrypted** so that they can only be viewed as images by using the VerifEye viewing software. Furthermore, if the files are tampered with in any way, even changing a single byte of information, they become non-viewable.
- The VerifEye viewing software requires a **HArdware-Based Software Protection (HASP) key** to be installed before it can transfer images from a TaxiCam controller or removable flash card. Keys are programmed with unique codes and issued only by a designated employee of VerifEye (Not by dealers or installation shops).

Safety Camera Programs
"Lessons Learned"

Characteristics of effective TaxiCamera Programs:

1. A robust specification
2. A single vendor with a proven track record
3. Careful evaluation of the vendors' proposals and thorough testing of the products
4. Affordable pricing
5. Inspection and enforcement
6. Dedicated and properly trained police personnel
7. Advertising the presence of the cameras and the training of drivers in the use of the emergency button and monitoring of the status light.

Safety Camera Programs
Affordability Considerations

- In NYC the retail price of a Single Camera with pre-alarm will be approximately $750, plus $80 to install. $830 (amortized over 5 years) works out to about $3.00/week.

- Bulk purchases make the cameras even more affordable. The NYC Single Camera with pre-alarm, when bought in quantities of 1000, costs $590/unit. Assuming an $80 install fee, the total price would be $670/unit. Amortized over 5 years, this works out to about $2.60/week.

- In 2005, Queensland auctioned 16 licenses which raised approximately $8 million. This funded the purchase and installation of 3,500 cameras (3 cameras + Fireproof/Waterproof + GPS + 7 days coverage)

- In 2006, Ottawa introduced a 5c meter surcharge to pay for its camera program. Within 30 months, the surcharge resulted in sufficient additional revenues to fund the camera program.

DEPARTMENT BULLETIN

security cameras

A
03-180
09/08/03

TAXICAB CAMERAS

Taxicabs are occasionally the scene of armed robberies, rapes and other serious offenses. In an effort to deter criminals from these acts and apprehend those who continue to victimize cab drivers and their passengers, the San Francisco Taxi Commission directed the installation of digital cameras in all taxicabs licensed by the City of San Francisco.

The San Francisco Taxi Commission further directed that the digital camera evidence be accessed only by the appropriate Law Enforcement Agency and only when investigating serious crimes. Additionally, given the resources required for downloading and preserving the photographic images, taxicab camera evidence will be routinely downloaded and given to the investigating inspector when the following crimes are alleged:

Homicide
Attempted Homicide
Arson
Kidnapping
Sexual Assault
Felony Assault
Robbery
Grand Theft
Hate Crimes
Motor Vehicle Theft

Taxicabs involved in other serious felonies will be processed only upon the request of the assigned inspector.

When responding to a serious incident involving a taxicab, members shall comply with the following procedures to ensure that physical evidence, specifically latent fingerprints and digital images are properly preserved and collected:

- Notify the appropriate investigative unit or operations center after hours.
- Close all doors on the vehicle (Opening a door triggers the filming process).
- The notified inspector shall determine whether the taxicab is to be processed at the scene or towed to Pier 29.

(Over)

IF THE VEHICLE IS TOWED TO PIER 29

- Place a hold on the vehicle for the appropriate investigative unit. DO NOT PLACE AN ADDITIONAL HOLD FOR C.S.I.

- Indicate on the tow slip the approximate time the crime occurred.

At Pier 29, CSI personnel will process the taxicab for evidence, download and preserve the digital photographs.

For incidents involving San Francisco taxicabs that occur outside of the City, the vehicle should be towed in accordance with the standard towing procedure for that jurisdiction along with notification to C.S.I. of the incident and the tow location. CSI personnel will make the necessary arrangements with the appropriate agencies to access and process the vehicle.

ALEX E. FAGAN
Acting Chief of Police

CITY AND COUNTY OF
SAN FRANCISCO

TAXI COMMISSION
MAYOR GAVIN NEWSOM

COMMISSIONERS TELEPHONE (415) 554-7737

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PATRICIA BRESLIN, VICE PRESIDENT
RICHARD BENJAMIN, COMMISSIONER, ext. 1
TOM ONETO, COMMISSIONER, ext. 6
MIN PAEK, COMMISSIONER, ext. 7
R. JAMES SLAUGHTER, ext. 4

JORDANNA THIGPEN, ACTING EXECUTIVE DIRECTOR

May 27, 2008

At the meeting of the Taxicab Commission on Tuesday, May 27, 2008 the following resolution was adopted:

RESOLUTION NO. 2008-XX

Adopting amendments to Rule 5.C.34 of the *Taxicab/Ramped Taxi Rules & Regulations* (amendments in italics, deletions in strikethrough:)

Rule 5.C.34:

All Taxicabs/Ramped Taxicabs shall be equipped with an approved operational security camera *meeting specifications and standards developed by the Executive Director of the Taxi Commission.*

(a) A list of approved camera model/systems *and specifications shall be reviewed on an annual basis and* shall be maintained at the Taxi Commission Office.

~~(b) All Taxicabs/Ramped Taxicabs shall be equipped with an operational security camera within nine (9) months from the adoption of Rule 5.C.34~~

~~(c)~~ (b) Each Taxicab must post on the exterior of the vehicle *a notice stating:* "VEHICLE EQUIPPED WITH SECURITY," and within the vehicle a notice stating: "THIS VEHICLE IS EQUIPPED WITH CAMERA SECURITY AND ALL OCCUPANTS WILL BE PHOTOGRAPHED."

~~(d)~~ (c) The manufacturer of each camera system to be used must agree to provide viewing access of the pictures only to a law enforcement agency, *including but not limited to, SFPD which* will agree to use the pictures for ~~criminal investigations~~ law enforcement purposes only. *Each manufacturer must also agree to provide the Taxi Commission or its designee with the system software for annual testing purposes only.*

(d) Color schemes shall submit to an annual inspection of each vehicle's camera system during the annual inspection cycle. If a vehicle is inspected twice annually, or if 75% of a color scheme's cameras fail inspection during an annual cycle, then cameras for that color scheme shall be inspected twice annually.

AYES: **NOES: 0**
ABSENT: **RECUSED: 0**

Respectfully submitted,

Jordanna Thigpen
Acting Executive Director

2008 SPECIFICATIONS FOR SAFETY CAMERA PROGRAM

Color Schemes may install safety cameras produced by Honeywell Systems or Verifeye, provided the cameras meet the following specifications:

1. Operational Specifications
    a. The system shall not interfere with any other systems on board the taxi and shall itself not be affected in any way by any sources of interference likely encountered on the taxi.
    b. The system shall have a back up system to preserve images in the event of loss of power.
    c. The system must have a panic button located in an inconspicuous location for the driver to utilize in the event of a crime.
2. Storage of Images
    a. In general images must be stored for at least 72 hours before being overwritten.
    b. The camera must have a storage card with at least 128 MB and shall be capable of storing at least 7,500 images.
    c. All stored images must be time and date stamped including a plate or car number.
    d. Each recorded image shall be automatically stamped with a unique and non-modifiable code that identifies the controller that used to record the image.
    e. The image storage unit shall be concealed from view and effectively inaccessible except by authorized personnel.
    f. The manufacturer of each camera system to be used must agree to provide viewing access and software of the pictures to law enforcement agencies, including but not limited to the San Francisco Police Department. The manufacturer must also agree to provide the Taxi Commission or their designee for inspections with access to software for testing purposes only during inspections.

3. Camera Head
    a. The camera and all system components shall be installed in a manner that does not interfere with the driver's vision or view of mirrors or otherwise normal operation of the vehicle.
    b. The camera must be equipped with infrared lighting source and operate automatically and in conjunction with image capture for day and night use.
    c. The lens of the camera must be of a type that captures the driver and all passengers of the vehicle on the recorded image.
    d. Sensor resolution shall be, at a minimum, 510 x 480 pixels.
    e. Vehicles equipped with a shield must be equipped with a two camera system. One camera shall be located in the approved location as set out above and the second camera shall be situated so that the lens is against the shield, so as to produce a clear image of the passengers in the rear seat.

4. Public Notices
    a. The system shall have no microphone or audio recording capabilities
    b. Decals must be installed on the right and left rear passenger door windows of the vehicle to advise passengers that a digital camera system is in operation. The decals shall be placed in either the top one third of the window, so that it is still visible when the rear window goes two thirds of the way down, or in the space that is provided in some vehicles directly behind the passenger's window. This is a window that is in a fixed position and cannot be lowered. The decal shall be placed in the lowest possible point here, so that the passenger has an opportunity to see the sticker before they enter the vehicle. The decals must be printed with a double-sided message for interior and exterior visibility.
    c. The decals will read "VEHICLE EQUIPPED WITH SECURITY CAMERA AND ALL OCCUPANTS WILL BE PHOTOGRAPHED." Decal lettering shall be typeset in Ariel 20 font.

5. Door/Panic Button Activation
    a. The recorder shall activate when any door is opened, with a minimum of one image being recorded every five seconds, within the first 60 seconds of the door opening. The recorder shall capture additional images recording at a rate of one image every five seconds for sixty seconds after activation and one image every 15 seconds for 45 minutes thereafter. The recorder shall then reset for the next door opening event, and shall also reset if a door is opened prior to completing any cycle.
    b. All systems shall have a panic button for drivers to utilize in the event of a criminal act.
    c. If the panic button is activated, the system must have the capacity to store 300 images spread evenly over five minutes; 150 images immediately prior to activation and 150 images immediately following activation, captured at a rate of one per second.

6. Manual Activation
    a. The driver/owner shall have no control of the imaging system, except for the emergency activation button, which the driver can manually operate.
    b. Drivers shall not alter the camera lens or attempt to prevent the cameras from recording images.