For Information
on 5 and 7 March 2003

Legislative Council –
Panel on Security and Panel on Health Services
Joint Panel Meeting on 5 and 7 March 2003

Administration's Response to issues raised at the meeting on 23 January 2003

Purpose

This paper provides the Administration's response to the issues raised by members at the Special Meeting of the Security Panel on 23 January 2003 in relation to the death of inmate Mr. CHEUNG Chi-kin in Siu Lam Psychiatric Centre (SLPC) on 19 November 2001.

Closed Circuit Television (CCTV) videotapes relating to the incident

2. An expert of the Technical Services Division of the Police Force has examined the CCTV videotape obtained from SLPC. Two witness statements made by the officer regarding the examination are reproduced at **Annex A**. According to the examination, the video recording was original and no tampering was found in the video segment.

3. Since the last Panel meeting on 23 January, the Police Force has further sought re-examination of the CCTV videotape. The results are as follows -

- Liaison with local university research centre
  Professor AU of the University of Science and Technology of Hong Kong opined that there is no existing technology that can help recover the previous images from videotapes which have been rewritten upon.

- Liaison with overseas law enforcement agencies
  The Police Force has approached the Federal Bureau of Investigation (FBI) of the US Government for assistance. It is

understood that the FBI laboratory is unable to provide the service requested by the Police Force. The laboratory's staff believe that the chance of recovery of the overwritten images is nearly zero. Besides FBI, the Police Force has sent the same request to other overseas law enforcement agencies through the Interpol but has yet to receive a positive reply.

Other means to identify evidence for further investigation

4. Members suggested that the Police should consider using other methods to obtain evidence in order to get better understanding of this incident, for example using hypnosis on the CSD officers to assist them to recall the incident. It must be pointed out at the outset that, as a matter of principle in criminal investigation, the Police cannot compel a suspect to answer questions and a suspect has the right to remain silent. The Police Force's directive is that hypnosis can only be used to help consenting witnesses to recall the event and absolutely cannot be used on suspects or potential suspects. With regard to the death of the inmate, the Coroner's Court has returned an open verdict. This implies that any of the witnesses who had given evidence might be connected to the incident and therefore the Police consider that it is not appropriate to use the above method on them. As regards lie detectors, their use to question witnesses or suspects in criminal investigation by the Police must be properly sanctioned but currently there is no underpinning legislation.

To strengthen the procedures for monitoring CCTV systems and handling CCTV tapes to ensure preservation of evidence

5. CSD has formulated detailed guidelines on the operation, monitoring and recording of both the analogue and digital CCTV systems for implementation in all institutions including SLPC. To ensure operational effectiveness, the guidelines have also encompassed an Action Cards System for compliance and reference by all duty staff.

6. To preserve the recorded images of CCTV systems as evidence, a 14-day rule for data retention/tape storage for both the analogue and digital CCTV systems would be strictly observed. In case an untoward incident has taken place, at least 48 hours' recording prior to the incident would be retained for subsequent inquiries, and such recording would be kept for six months or upon completion of the investigation, whichever is the later. Moreover, to

ensure the quality of the recorded images, CCTV videotapes can only be reused for a maximum of 14 times.

7. With the implementation of the above measures, procedural propriety in the handling of recorded images of the CCTV systems would be substantially enhanced.

8. In terms of overall strategy, CSD is seeking to provide digital CCTV systems as a standard provision in all penal institutions in mapping out their future plans. For locations such as hospital wards, isolation cells, protected rooms or observation cells where vulnerable prisoners requiring constant and close surveillance are usually accommodated, priority would be given to digitalize the local CCTV monitoring system to back up the CCTV Central Monitoring System inside the control room. Information on the features and advantages of digital CCTV systems extracted from the Report of the Special Task Group is at Annex B for reference.

9. Last but not least, comprehensive pre-operational training would be given to staff for manning new CCTV systems, and the Service Level Agreement with the Electrical and Mechanical Services Department would be reviewed to strengthen system maintenance.

Effectiveness of the patrolling system

10. In SLPC, every ward where prisoners are located at night is manned by a Ward Patrol Officer. For the Observation Unit of the Admission Ward (AOU), the Ward Patrol Officer is assisted by a Ward Patrol Assistant.

11. It is the primary duty of the Ward Patrol Officer to patrol the ward and the prisoners thereat, and to report any irregularity detected, at 15 minutes' intervals. The patrolling frequency is recorded by the pegging of the servis recorders located at different locations inside the ward. For the AOU, the surveillance is further assisted by a local CCTV monitoring system that screens the eight special rooms in sequence when occupied.

12. Inmates who are considered in need of special and constant supervision by reasons of marked depression or emotional problems will be recommended by the Medical Officer or the Clinical Psychiatrist to be put on a Medical Observation List. This is a special system to alert the staff to pay

particular attention to certain inmates for medical reasons. The overall design of the patrolling system is to ensure that night accommodation for inmates is physically and closely observed by the staff.

13. On 19 November 2001, the Ward Patrol Officer of AOU reported for duty at 0115 hours. According to the servis recorder time chart record, he had performed the patrolling duty to the cell occupied by the deceased at 15 minutes' intervals as required. His surveillance of the cell was also assisted by the CCTV monitor placed near his duty desk. At 0525 hours, having observed that the deceased had remained in his sleeping position since the last tour of visit, he banged the cell door and called out to the deceased but received no response. At the same time, he also observed that the deceased did not show sign of respiration. In view of this, he activated the emergency procedure and drew the emergency keys to unlock the cell door for conducting a physical check together with the Ward Patrol Assistant. The internal alarm was then activated and the control room staff alerted, followed by the arrival of reinforcement staff to apply emergency resuscitation to the deceased. After examination by the on-call Medical Officer urgently summoned to the scene, the deceased was rushed to Tuen Mun Hospital by ambulance.

14. As the incident was detected by the patrol staff who immediately activated the emergency procedures, it is considered that the patrolling system was effective. In fact, the patrolling system has helped to detect and stopped 95 suicidal attempts in the past 5 years within CSD institutions.

The role played by the two control room staff of SLPC

15. The night duty control room staff is primarily responsible for the operation of the CCTV system and the communication system in the control room. Regarding the CCTV system, 120 surveillance cameras at various locations in SLPC were linked to the CCTV Central Monitoring System in the Control Room. The communication system includes the radio, intercom and telephone systems of SLPC. As required by the relevant Superintendent's Order, it is one of the primary duties of the control room staff to videotape the course of incident once they are alerted to an untoward occurrence.

16. It should be recalled that the eight surveillance cameras at the AOU were linked to two different systems. One was the local CCTV system inside the ward, and the other was the CCTV Central Monitoring System located in the

Control Room, to which all 120 surveillance cameras in the SLPC were linked. In respect of the former system, images captured by the eight cameras are displayed on the screen of a monitor inside the ward in a sequential, cyclical manner at four-second intervals, with automatic recording of the images displayed. In respect of the latter system, images captured by the 120 surveillance cameras are displayed on the screens of two 20" monitors, also in a sequential, cyclical manner with automatic recording of the images displayed. Furthermore, in case of an untoward occurrence, the control room staff may "call up" the images captured by any particular camera to the monitors for continuous viewing and recording. (For details, please see paragraphs 6.3-6.12 of Report of the Special Task Group enclosed as Annex A to the previous Panel paper of reference (CB(2)947/02-03(01)).)

17. According to police investigation, the local CCTV system has maintained about 17 hours of continuous, untampered videotape of activities leading up to the incident of discovery and rescue and shortly going beyond the incident. On the other hand, the relevant videotape of the CCTV Central Monitoring System only started to record images of the surveillance camera of the deceased's cell a few minutes after the internal alarm was sounded. Following investigation by the Board of Enquiry, it was concluded that the two control room staff, when they were first alerted of the incident on the day, had failed to pay attention to the CCTV monitors to ensure the proper and timely recording of the activities related to the incident. They thus failed to comply with the relevant Superintendent's Order and were therefore made subject to disciplinary action.

18. Despite this failure, the local CCTV system had functioned properly during the material time before, during and after the incident and automatically recorded the images of the deceased's cell as displayed on the screen of the monitor. After viewing the relevant videotape, the Board of Enquiry detected no irregularities. It is considered that the failure on the part of the two control room staff, once they were alerted, to ensure the proper and timely recording of the images of the deceased's cell by the CCTV Central Monitoring System had no direct relevance to the death of Mr. CHEUNG Chi-kin.

To adopt more stringent guidelines for handling inmates by Correctional Services Department staff to ensure the protection of the rights of inmates

19. Prison Rules, standing orders and departmental guidelines in relation to treatment of inmates and their rights are in place for compliance by CSD staff. The professional ethics of staff in relation to their duties to protect the rights of inmates are developed and strengthened through basic recruit training and continuous in-service training. In monitoring the discharge of duties by the staff, the Superintendent and other senior officers of an institution are required by the laws and orders to pay frequent inspections everyday to all parts of the institution where inmates are located. In addition, the Commissioner of Correctional Services and other senior officers from the Headquarters pay regular inspections to the institutions and see that the rights of inmates are respected.

20. Every inmate on admission is given an Information Booklet that elaborates on his rights while in custody. CSD officers will also explain inmates' rights in clear terms at the induction talks and on other occasions as requested. Moreover, Prison Rules and standing orders related to treatment of inmates are open to access by all in the institution libraries.

21. Various channels of complaint are provided in the penal system for the protection of the rights of inmates. Apart from the ample opportunities during the inspections of senior officers, the following channels of complaint are available to the inmates:

- Complaints Investigation Unit of CSD
- Visiting Justices of Peace
- Chief Executive/Secretary for Security
- The Ombudsman
- Members of the Legislative Council

22. In respect of young inmates in particular, CSD has made an extra effort to encourage their parents and guardians to approach the senior officers of the institutions for matters related to the well-being of their children.

23. In sum, there is a well-structured system to ensure the protection of the rights of inmates. Continuous efforts will be made to further strengthen the system.

Adoption of the practice of daily ward-rounds as in hospitals of the Hospital Authority

24. At present, resident medical officers from the Department of Health (DH) are already conducting daily ward-rounds to manage inmates' somatic diseases, and clinical psychiatrists from the Hospital Authority (HA) also visit the SLPC daily to assess new cases and to provide follow up treatment to the existing ones.

25. After careful consideration, HA is of the view that daily ward rounds as practised in a general hospital setting may not be appropriate in SLPC, as inmates with mental illness need to be seen in a treatment area where there is privacy and inmates can spend more time discussing their problems with the visiting psychiatrists.

Weekly meeting of psychiatrists, medical officers and nursing staff

26. At present, the visiting psychiatrists to SLPC conduct monthly multi-disciplinary case conferences with the nursing staff to discuss cases due for review by the Mental Health Review Tribunal. If necessary, Medical Officers from DH would be pleased to participate in such discussion.

27. Depending on the number of inmates with complex problems requiring multi-disciplinary discussions, HA will consider whether there is a need for such conferences to be held on a weekly basis.

Resident psychiatrists in SLPC

28. At present, there is already a team of six visiting forensic psychiatrists from HA providing daily service to SLPC. The team is available for consultation during normal working hours from Monday to Friday. Three of the forensic psychiatrists will also provide service to inmates during the working hours on Saturday's morning.

29. The suggestion of having resident psychiatrists, and in particular its resource implications, will have to be considered carefully by HA in the overall context of provision of medical and psychiatric services to SLPC.

Cessation of the application of strong sedatives

30. The prescription and choice of medication is a professional medical decision based on individual needs. Nevertheless, based on the recommendations of the special task group, we have already adopted more stringent procedures in the use of drugs and the monitoring system.

Visits by the Royal College of Psychiatrists to SLPC and Enhancement to the Service

31. On 14.11.1995, three psychiatrists from the Royal College of Psychiatrists (including the Convenor of the College) visited SLPC. After the visit, the following comments were made:

> *"Thank you so much for your kind efforts to answer all our questions so considerately. We are most impressed with the security of the institution and hope that the mental health needs of the residents are improved with the appointment of further medical staff and modifications to some of the environmental disadvantages."*

32. On 21.3.2000, three other psychiatrists from the College paid a further visit to SLPC and provided the following endorsement afterwards:

> *"We visited on behalf of the Royal College of Psychiatrists as part of an accreditation exercise. We were impressed by much of the work being done here to help mentally disordered offenders and assessments undertaken here. We were also grateful for the time given by the staff. We found the standard of professionalism to be high. Thank you."*

33. Since 1995-96, the strength of medical doctors and psychiatrists provided by HA for SLPC has seen gradual improvement as follows:

Year	Strength
1995	1 Consultant Psychiatrist 1 Senior Medical Officer (Psy) 2 Medical Officer (Psy)
1996 Jan	1 Consultant Psychiatrist 2 SMO (Psy) 2 MO (Psy)
1996 July	1 Consultant Psychiatrist 2 SMO (Psy) 3 MO (Psy)
1996 Oct	2 Consultant Psychiatrists 1 SMO (Psy) 3 MO (Psy)

34. Improvement to the service in SLPC is an on-going job of the management. In brief, the following plans have been implemented in SLPC in these few years:

- Enhancement to the interior colour scheme;
- Setting up of several big aviaries for hobbies/recreation;
- Setting up of fish pond/aquarium for hobbies/recreation;
- Provision of light music in daytime;
- Enhancement to the counseling programs for patients in group/individual;
- Enhancement to the Consultation Room facilities;
- Setting up of a medical library for the psychiatrists and nursing staff; and
- Enhancement to the rehabilitation service for patients including the enlistment of more service provided by the NGOs & Religious bodies.

Response on the comparison of procedures for applying sedatives to inmates in Florida of the United States, Canada and Hong Kong

35. Requirement of an inmate's consent: Although there is no requirement that verbal or written consent must be obtained before the administration of sedatives, inmates may generally at their own will refuse any medications prescribed to them. However, in emergency cases whereby an inmate is either posing danger to others or will be likely to cause harm to himself/herself which warrant the application of sedatives to the inmate from the professional angle, it may not be feasible to obtain verbal or written consent from the inmate.

36. Role of a physician in the application process of sedatives: It is a good clinical practice for attending doctors to explain to patients their clinical conditions and the treatment prescribed. Medical officers are encouraged to provide more detailed explanations to inmates when sedatives are prescribed.

Presentation

37. The above information is presented to Members for reference.

Security Bureau
Health, Welfare and Food Bureau

Annex A

HONG KONG POLICE FORCE
STATEMENT /REPORT

Report No. 2002180301WKBL TSD, Crime Wing Station
Name of informant/witness. [redacted] C.C.C. No. 4151-3057-2818
Age. [redacted] Sex [redacted]
Address. [redacted]
Tel No. [redacted] Occupation. Inspector of Police
Nationality and dialect. [redacted]
Taken by [redacted] in English language
at 11:06 hours on 30 September 2002 at (Place) Technical Services Division.
Interpreter. None

I am willing to make a statement to the Police The statement I am about to make is true to the best of my knowledge and belief and I make it knowing that if I wilfully state anything which know to be false or do not believe to be true, I may be liable to prosecution for a criminal offence.

Signed .....

Witnessed by

Interpreted by

I am an Inspector of Police presently attached to Technical Services Division, Crime Wing, Hong Kong Police Force.

I was awarded B.Eng. (First Class Honours) in Electronic Engineering in 1992 by University of London. I am an active member of International Association for Identification and Society of Motion Picture and Television Engineers. I am also a member of Institute of Electrical and Electronics Engineers. I have experience in electronic designs including power, analogue and digital circuits. I have received audio and video examination training. My forensic case experience includes audio and video tape examinations, recorder examinations, electronic instrument examinations, authenticity examinations, computer and data evidence recovery and analyses. I have accomplished more than 850 forensic cases and handled more than 1200 exhibits. I have been accepted as expert witness in Court of First Instance, District Court and Magistracy.

The following are the specifics of the service which I provided between 14:50 hours on 13 May 2002 and 16:20 hours on 30 September 2002.

File/Case Number: CPK RN 01019194

Other Reference: (2617) in TSD.R&D.9007

Service requested: Video Authenticity Examination

Service requested by: [redacted]

Specimens received: 13 May 2002

from: [redacted]

Q1 One Sony E180 video cassette tape marked in part "SUN" and

Q2 One Panasonic AG-6720A-B video recorder with serial number J1TA00133

Service Provided:

Specimen Q1

An authenticity examination was conducted between video counter 0:00:00:00 (the tape beginning) and video counter 1:03:39:22 of specimen Q1. The range corresponded to 16.97 hours if the specimen was recorded by using 48 hours mode.

The findings are listed below, with reference to 0 Hour 0 Minute 0 Second 0 Frame as the beginning of the specimen tape:

Event 0: At video counter: 0:00:00:00

It was the beginning of the specimen tape. Video image began at the locaton. Control signal was not observed before this event. Record-start signature with double occurrences of control track patterns was identified.

Event 1: At video counter: 0:04:12:09

A single frame with noisy white streaks was located at this event. Normal magnetic pattern was observed.

Event 2: At video counter: 0:05:21:21

A single frame with noisy white streaks was located at this event. Normal magnetic pattern was observed.

Event 3: At video counter: 0:21:23:12
A single frame with noisy white streaks was located at this event. Normal magnetic pattern was observed.

Event 4: At video counter: 0:29:26:03
A single frame with noisy white streaks was located at this event. Normal magnetic pattern was observed.

Event 5: At video counter: 0:31:33:24
A single frame with noisy white streaks was located at this event. Normal magnetic pattern was observed.

Event 6: At video counter: 0:34:35:15
A single frame with noisy white streaks was located at this event. Normal magnetic pattern was observed.

Event 7: At video counter: 0:37:53:1
A single frame with noisy white streaks was located at this event. Normal magnetic pattern was observed.

Event 8: At video counter: 0:40:35:08
A single frame with noisy white streaks was located at this event. Normal magnetic pattern was observed.

Event 9: At video counter: 0:50:34:12
A single frame with noisy white streaks was located at this event. Normal magnetic pattern was observed.

Event 10: At video counter: 1:03:39:22
Blank screen was observed. Missing control signals lasted for 25.15 cm. Record-over stop signature was identified.

Specimen Q2

The specimen was tested for its functionality and its relationship with specimen Q1. It was found that specimen Q2 was in good working condition. The magnetic head signatures and characteristics produced were compatible with the recording on specimen Q1.

Conclusion:

Based on the findings, it is indicated that the video recording in specimen Q1 was an original recording. The relevant video segment from event 0 to event 10 was written over onto the specimen from the beginning of the tape. Before this overwriting, the specimen was not a blank tape. The noisy streaks from event 1 to event 9 can be caused by abnormality with video source signal or the existence of dirt on the specimen tape during recording. Based on the characteristics of the recording, in my opinion, there was no tampering found in the relevant video segment of the specimen

Specimens Q1 and Q2 were released to DSPC [redacted] on 30 September 2002 at 16:20 hours.

Comments:

An authenticity examination on video recording is to determine whether an investigative magnetic video tape is an original or a copy, and the characteristics of the recordings, including any alterations to the tape.

The methodology of examination includes the following procedures and analyses

1 Documentation of the evidence
2 Inspection of the evidence tape to identify damages and proper playback configuration.
3 Critical listening and viewing to ensure that all questionable events in the designated areas are recorded.
4 Physical inspection to identify splices, tape damage and any physical alterations.
Magnetic development to visually reveal the events recorded on the tape Various magnetic head signatures and artefacts can be located.
6 Electronic analysis to determine the signal characteristics of the evidence recording.
Comparison analysis to compare examination findings with those of controlled test results.

Terminology and explanations

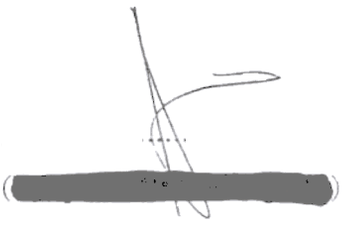
1 An event is defined as a collection of one or more areas of interest on a tape, which requires detail investigation

2. A video counter is a running reference number showing on a video tape player.

3. A start signature is a collection of recording properties, which is caused by a start recording operation of the recorder.

4 A record-over stop signature is a collection of recording properties, which is caused by a stop operation during the progress of overwriting a previous recording

This statement consisting of five page(s) in English language, signed by me, has been read by me. I understand that I can correct, alter, and add anything I wish.

Signed 

1640 hours on 2002.9.30

HONG KONG POLICE FORCE
STATEMENT /REPORT

Report No. 2002180301WKBL TSD, Crime Wing Station

Name of informant/witness. [redacted] C.C.C. No. 4151-3057-2818

Age. [redacted] Sex. [redacted]

Address [redacted]

Tel No. [redacted] Occupation Inspector of Police

Nationality and dialect [redacted]

Taken by [redacted] English language

at 11:06 hours on 13 February 2003 at (Place) Technical Services Division

Interpreter. None

I am willing to make a statement to the Police The statement I am about to make is true to the best of my knowledge and belief and I make it knowing that if I wilfully state anything which I know to be false or do not believe to be true, I may be liable to prosecution for a criminal offence.

Signed .....

Witnessed by

Interpreted by

I am a Senior Inspector of Police presently attached to Technical Services Division, Crime Wing, Hong Kong Police Force

I was awarded a Bachelor of Engineering (First Class Honours) degree in Electronic Engineering and a Master of Philosophy degree, in year 1992 by University of London and year 2002 by City University of Hong Kong respectively. I am an active member of International Association for Identification and Society of Motion Picture and Television Engineers. I am also a member of Institute of Electrical and Electronics Engineers. I have experience in electronic designs including power, analogue and digital circuits. I have received audio and video examination training. My forensic case experience includes audio and video tape examinations, recorder examinations, electronic instrument examinations authenticity examinations computer and data evidence recovery and analyses I have accomplished more than 850 forensic cases and handled more than 200 exhibits. I have been accepted as expert witness in Court of First Instance, District Court and Magistracy

The following are the specifics of the service which I provided between 12 5 hours on 19 November 2002 and 11:25 hours on 12 Februarv 2003

File/Case Number: CPK RN 01019194

Other Reference: (2869) in TSD.R&D.9007

Service requested: Videotape Examination

Service requested by: [redacted]

Specimens received: 19 November 2002

from: DSPC [redacted]

Q1 One Sony E180 video cassette tape marked in part "SUN" and

Q2 One Panasonic AG-6720A-B video recorder with serial number J1TA00133

Service Provided:

Further to the request by SIP [redacted] on 14 November, 2002, an examination was conducted in order to address the issues that were listed in the request memo.

Findings:

Specimen Q1

After the first segment (from video counter 0:00:00:00 to 1:03:39:22` there was onlv one other segment of video found in the remaining portion of specimen Q1 This segment lasted for about 40 minutes in 48-hour mode recording. The rest of the tape which was equivalent to about 33 hours, was identified as virgin tape, that is, this portion of tape has never been used for recording

Specimen Q2

During the test on specimen Q2, the video recorder, it was found that the on-screen date-time clock of Q2 was in good working condition. A test tape was made using specimen Q2 at 48-hour mode. Making reference to the on-screen clock, it was confirmed that the recording speed of specimen Q1 was in agreement with the test tape's. This indicates that specimen Q2 was not malfunctioning by running at a slower speed than normal

In addition, it was found that at 48-hour mode, the recording speed of specimen Q2 was running at 1.376 mm per second. On the other hand, had it been the case that the

firs segment (from video counter 0:00:00:00 to :03:39:22 of specimen Q represented a 24-hour recording, the calculated running speed of the recorder would have been 34 mm per second, which was about 25 percent slower than the measured speed of specimen Q2. Hence, specimen Q1 did not represent a 24-hour recording

Comments:

Providing that specimen Q2 was in normal working condition when Q1 was made, I suggest that the recording would have been started late and/or stopped early so that only about 17 hours of video had been recorded in the first segment.

As have mentioned in my statement dated 2002.09.30, the first segment was written over onto the specimen from the beginning of tape. Since specimen Q1 was a reused videotape, there would be certain number of previous recordings that had been written over. On specimen Q I found that the overwritten previous recording was not retained on the tape

Typically an verwrite operation rearranges the magnetic pattern on the videotape Therefore, an attempts to recover the overwritten recording would turn into a wastefu

Conclusions:

Specimen Q2 was not malfunctioning by running at slower speed than normal Specimen Q1 did not represent a 24-hour recording. The last 33 hours of specimen Q was virgin tape. No previous recordings that had been written over was recovered

Specimens Q and Q2 were released to DSPC [redacted] on 12 Februarv 2003 at 1 25 hours

This statement consisting of three page(s) in English language, signed by me, has been read by me. I understand that I can correct, alter, and add anything I wish.

Signed .....

[redacted]

1140 hours on 2003.2.12

Annex B

Extract from

REPORT OF THE SPECIAL TASK GROUP SET UP IN RELATION TO THE DEATH OF DAR 21341-01 CHEUNG CHI-KIN IN SIU LAM PSYCHIATRIC CENTRE ON 19.11.2001

Features and Advantages of Digital CCTV System

6.19 With the advent of IT technology, the digital CCTV system can achieve the following operational efficiencies and security objectives: -

(a) The images captured by all surveillance cameras as data can be recorded continuously though the monitors continue to operate in "Time-Lapse Mode".

(b) All data will be recorded into the built-in hard-disks of the Digital Video Recorders (DVR) and stored up to 14 days[11]. When the hard disks are full, the earliest captured data would be replaced automatically by incoming captured data. In short, at any one time, a 14-day storage of digital data is available and retrievable in the system.

(c) There are back-up hard disks, normally three in numbers, installed inside the DVR. This will forestall accidental loss of recorded data if there is a corruption (failure) of any hard disk. (This enhanced function i.e. the "RAID[12] 5" model will not be available for the improvement plan within 2002/03 but will be pursued at a later stage. In the interim and to serve as back-up, spare DVR may be provided for the system.)

(d) Through the built-in CD-writer and with proper authorization, any data e.g. those for the untoward incidents/special occurrences, recorded (captured) in the hard disk within the 14-day time frame could be downloaded and copied to a CD-ROM. With reliable software, the authenticity of the copied CD-ROM could be verified.

(e) Digital security measures can be implemented to prevent unauthorized access to the system.

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[11] Technically, the digital data storage period in the hard disk of a DVR is determined by several parameters such as the hard disk capacity, the number of cameras for a designated group, the frame rate (number of images captures by a camera per second) and the resolution of images.

[12] Redundancy Arrays of Independent Drives (RAID)

(f) Instead of using paper-based register to record the name of the CCTV operator as for the analogue system, the digital system allows operator's identities to be superimposed on the CCTV video image as caption and recorded into the system. In other words, each and every image frame recorded in the system is stamped with the operator's name. The digital CCTV system will therefore provide for a more reliable means to keep track of the identities of the operators of the system.

(g) The resolution[13] of digital data hard copy is higher than that of the analogue system.

[13] The resolution of the pictures captured will be 384 x 288 pixels.