



Home Office

BUILDING A SAFE, JUST
AND TOLERANT SOCIETY

Control room operation: findings from control room observations

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Home Office Online Report 14/05

The views expressed in this report are those of the authors, not necessarily those of the Home Office (nor do they reflect Government policy).

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Executive summary

This report details the findings of a large-scale study of the operation of control rooms designed to assess the practical impact of various factors on the overall effectiveness of CCTV systems.

Methodology

The findings are based on over 550 hours of observation in thirteen control rooms. The study was broken down into three elements: the quantitative study; the qualitative interviews and researcher observations.

The quantitative study involved the collection of incident data (description of targets, length of surveillance, camera(s) used and resulting action), the collection of contact information (source and frequency of incoming calls and resulting action), and a record of operators' time spent away from monitoring.

The qualitative interviews were conducted with at least one operator per shift and included, amongst other things, discussion of such issues as operator attitudes to CCTV, operator working practices, knowledge of relevant legislation, and attitudes towards working relationships with external agencies. These responses were substantiated through researcher observations.

Control room ownership

Ten of the thirteen control rooms observed were owned and managed by the local authority, and were staffed by either local authority employees or private security staff. In order, therefore, to deal with crime and disorder related issues, effective relationships with the police had to be developed. This relationship was found to vary widely across the control rooms, with various consequences.

Regular police contact was found to aid operators in conducting surveillance effectively, as well as to increase knowledge of the geographical areas, their crime problems, and problem individuals within these areas. The issue of ownership comes up throughout the report, and is most pertinent to the evaluation of communication links in Chapter 7.

Control room design

The design of the control room, its size in terms of the number of cameras, monitors and operators, and the organisation of monitoring, had noticeable impacts on the effectiveness of control room operation. Most notably, the probability of detecting an incident on the cameras is substantially reduced when there is a high camera-to-operator and camera-to-monitor ratio. This was the case when there were more than 100 cameras per operator.

Three monitoring procedures were observed, each with its advantages and disadvantages depending upon the aims of the systems, their size and the types of systems in place. The optimum monitoring style was observed, whereby the operator was responsible for monitoring a specific geographical area, yet was able to monitor all the cameras in the control room whenever necessary. This ensured that all areas received some level of attention, but also ensured that the operators could work together during more serious incidents.

Control room management

The level and type of control room management is a key determinant of a control room's success. It was found that managers with other roles outside of CCTV often neglected the operation of the control room. This was reflected in unorganised, and sometimes unprofessional working activities on a daily basis. Management expertise was also seen to have an impact on the operation of the control room, particularly technical expertise. Where managers had technical knowledge, they were able to work more efficiently with contractors, and could pass on their knowledge more effectively to the operators.

Operators' working practices

Much was learnt from the observation of operators' working practices. Both between the control rooms and within the control rooms there was a wide variety of: operator monitoring styles; knowledge of the areas being surveyed, of the technology and of the relevant legislation; and communication practices. There was also substantial variation in attitudes towards their jobs and their working relationship with the management, as well as with external agencies.

Key issues raised included the importance of regular formal and informal contact with the police, as a means of better targeting and keeping the operators informed of the latest intelligence. Another important issue was the need to maintain the operators' interest in their work. Ensuring that the operators could interact with the system, and had regular two-way communication with external agencies, helped to maintain their interest and reduced the likelihood that they would get bored and engage in illegitimate activities.

Communication with external agencies

Communication within control rooms is vital to optimise their effectiveness in detecting and dealing with incidents. There was found to be wide variation in the type and level of information received and passed on by the control room; this was dependent on the efficiency and knowledge of the operators, as well as the working relationship between the agencies.

The most effective form of communication was the police radio. Two-way police radios enable the operators to converse directly with the officers on the ground, giving them step-by-step details of the incident, perpetrator etc. One-way radios, although they do not allow the operators to converse with operators on the ground, do allow the control room to be contacted directly by the police. Moreover the operators can overhear calls on the radio, directing surveillance accordingly. Police access to images in their own police control rooms encourages a more efficient deployment of resources to incidents.

Processing and managing evidence

The process of tape management (recording, logging, storage, and retrieval) is vital when the system is used retrospectively, providing evidence that can be used to identify offenders, witnesses, or even victims. These images can also be used to extract guilty pleas, as well as to secure convictions in court. Methods of tape management varied across the control rooms, and in some extreme cases involved such lengthy processes that it took up to 35 per cent of a shift. This has implications when the control room also aims to be active in detecting incidents.

A number of control rooms implemented tape management procedures which reduced the disruption to proactive monitoring. Examples include preparing tapes during quieter periods of the day (i.e. 3-6a.m.); changing tapes during the overlap between shifts, ensuring that one shift performs the tape changes whilst the other shift monitors the cameras; and, depending on available funds, introducing digital recording systems that require substantially less management than analogue systems.

1. Introduction

This report details the findings of an in-depth study carried out on thirteen CCTV control rooms' monitoring systems set up under the Home Office Crime Reduction Programme. The study formed part of the independent evaluation of CCTV funded by the Home Office CCTV Strategy Round 2.¹ Ten of the thirteen control rooms were local authority-owned, whilst three (which collectively monitored one large CCTV system) were police-owned. A total of 553.5 hours of observation were supplemented by interviews with operators and data collection on incidents monitored.

Control rooms are a key element of any CCTV system, as it is here that the system is operated, and it is within the control room that key decisions are taken which can impact substantially on the overall effectiveness of the system. A crucial issue throughout this report is the importance of establishing a control room that works towards achieving stated objectives, not only the objectives of the control rooms as a whole but also those of each individual system monitored within them.

The study identified six key aspects in the operation of control rooms:

- control room ownership;
- control room design;
- control room management;
- operators' working practices;
- communication with external agencies;
- processing and managing of evidence.

The report is structured in the following way:

Methodology

The second chapter describes the methodology used in the study.

Control room ownership

The ownership of a control room underpins its strategic and operational direction and also influences its capacity to meet its objectives. Most control rooms under evaluation were local authority-owned and primarily addressed crime and disorder. This third chapter highlights the impact of local authority-owned control rooms, which need to develop external working relationships with the police, the key agency when dealing with crime and disorder.

Control room design

Chapter 4 points out that monitoring can be affected by a number of control room design features. Low camera to operator and camera to monitor ratios increase the probability of operators identifying an incident. Geographical areas receive varying amounts of monitoring depending on the links between cameras and individual monitoring stations and the presence or absence of a dedicated operator for each station.

Control room management

Control room management is a central issue and is discussed in Chapter 5. There are a number of important aspects. Control rooms benefited from a dedicated manager with a strong operational input into daily control room activities. Control room managers who were

¹ For the overall results of the CCTV evaluation see Gill *et al.*, (2005).

competent in staff management, operational knowledge of CCTV systems, and relationship-building with external agencies, could ensure that systems were monitored effectively, as could those who ensured that there was a clear Code of Practice and enforced its principles.

Operators' working practices

These are reviewed in Chapter 6. Effective monitoring, i.e. the operator's ability to spot incidents, depends on a range of factors, including his/her employment status, the terms and conditions of his/her employment, his/her skills and knowledge held, his/her training, the types of targets, the areas monitored, and other duties being carried out. This chapter outlines the impact of each of these issues.

Communication with external agencies

Chapter 7 points out that the quality of information entering and leaving the control room affects an operator's ability to spot and deal with an incident, and this depends on communication links with other agencies. This chapter explores the effect of a range of different communication methods including police radio, dedicated police landlines, and radio links with local shops and public houses.

Processing and managing evidence

The way in which footage is recorded, stored and retrieved is crucial to the production of useable evidence (Chapter 8). The process of tape management can impact significantly on the operation of the control room as a whole; where it is time-consuming it can interfere with camera monitoring.

2. Methodology

This report is based on the findings from 553.5 hours of observation carried out in thirteen control rooms. Each control room was observed for a number of hours over a one-week period, usually two to three months after the CCTV system had become fully operational.

The systems became fully operational at various times during the evaluation: the first in March 2003, and the last in January 2004. Therefore the observations were conducted at different stages during this period. The number of hours of observation in each control room varied depending on the total number of hours the room operated per week. For example, the majority of control rooms operated for 24 hours a day, seven days a week, and each of these was subjected to a total of 48 hours of observation over one week. However, six control rooms operated for less than 24 hours a day, and were therefore subject to less observation, on a pro-rata basis. Table 2.1 lists each of the control rooms observed; the date of the observation; the number of hours in which the control room was operational per week; and the number of hours during which each was observed for the purposes of this study. The control rooms are listed from the earliest observed to the last.

Table 2.1: Date and length of observation conducted in each control room

Control room ²	Date of observation	Total operational hours per day	Number of observational hours
Dual estate	November 2002	7**	37
Eastcap estate	March 2003	24	48
Westcap estate	May 2003	24	48
Borough town	May 2003	17.5**	44
Deploy estate	July 2003	24	48
Northern estate	July 2003	24	48
Hawkeye ³	July/August 2003	16*	108 ⁴
City outskirts	September 2003	24	48
Market/Shire town	October 2003	10**	28.5
South city	October 2003	24	48
Southcap estate	February 2004	24	48
			553.5

*Closed on Sundays

**Average operating hours per day. Most operate longer hours on Friday/Saturday, but shorter hours on Sundays.

The observation aimed to cover the operating hours of a full day during the week and another at the weekend. Therefore for those control rooms operating 24/7, the observation included the full 24 hours of a weekday and the full 24 hours of a weekend day (Saturday). This method ensured that the range of hours typically operated in the control room was covered by the researchers.

The control rooms varied in a number of ways, and each feature played an important role in determining the effectiveness of each control room.

Table 2.2 lists the major variations: whether the control room was newly built or already in use; the ownership; who employed the operators; the number of cameras per operator; the type of geographical area monitored; the types of communication links with the police; and the

² Each control room was given a codename. This codename is also the name of the evaluated system, which is monitored from the control room. This allows cross-referencing with the CCTV evaluation's main findings report (Gill *et al.*, (2005): *Assessing the Impact of CCTV*, Home Office Development and Practice Report).

³ The Hawkeye system was made up of three separate control rooms, therefore, although there are 11 systems listed, a total of 13 control rooms were observed.

⁴ Each of the three control rooms were monitored for 36 hours, thus the total was 108 hours.

image recording technology used. It is important to note here that these are just a few of many features that varied from one control room to another.

Table 2.2: The variation in types of control rooms

Control Room	New/existing facility	Ownership	Operators employed by?	Number of cameras per operator	Types of areas monitored	Communication links with police	Recording technology used
Dual estate	Existing	Local authority	Local authority	67	Town centre; residential	Police radio (two-way)	Analogue
Eastcap estate	Existing	Local authority	Private security	50	Town centre; residential	Police radio (two-way)	Analogue
Westcap estate	Existing	Local authority	Local authority	20 - 60	Town centre; residential	None	Analogue
Borough town	Existing	Local authority	Local authority*	173 - 520	Town centres	Police radio (one-way)	Analogue
Deploy estate	Existing	Local authority	Private security	49 - 66	Town centre; residential	Police radio (one-way)	Analogue and digital
Northern estate	Existing	Local authority	Local authority	25 - 37	Town centre; residential	Police radio (one-way)	Analogue
Hawkeye	New	Police	Private security	123 - 153	Car parks	Police radio (one-way); Police Rolling Brief	Analogue
City outskirts	Existing	Local authority	Private security	48	City centre; park; residential	None	Digital
Market/shire town	New	Local authority	Private security	27	Town centre; residential	Retail radio	Digital
South city	Existing	Local authority	Local authority*	65 - 86	City centre; car parks; residential	Police radio (one-way); Retail/pub radio	Digital
Southcap estate	Existing	Local authority	Local authority*	175	Town centre; residential	Police radio (one-way)	Digital

* Also have some level of police monitoring performed within the control room.

The table clearly indicates the diversity of control rooms observed and goes some way to conveying the complexity of the task of evaluating the impact that each of these factors has on the effectiveness of control rooms. Standardised methodological procedures were utilised to ensure that the information could be compared reliably.

The standardised procedures were applied to three main tasks: a quantitative study; qualitative interviews with operators; and researcher observations.

Quantitative study

Within each control room, data were collected on three main aspects of control room operation:

1. The researchers recorded each occasion when an operator actively monitored a target for one minute or more.⁵ Incident templates (see Appendix A) were completed on each occasion, including a detailed description of the individuals involved, their age, gender, ethnicity, and outstanding features, such as clothing (caps, hooded tops etc). The reason for monitoring the target was also noted, including a description of the offence committed, where appropriate. Other information included the time that the surveillance started, the length of the surveillance, the camera numbers used and any actions that were taken as a result of the surveillance. For a more detailed description of this task, see Appendix B.
2. The researchers recorded every time the control room was contacted by an external agency. A contact template (see Appendix C) was maintained by each researcher throughout each shift, which noted the origin of the call, whether surveillance was performed as a result of the call, whether the target was found, and any action that resulted from the surveillance.
3. The researchers recorded all instances when the operators were *not* performing proactive monitoring duties. Details of the operators' breaks were recorded during each shift, detailing the length and purpose of each operator's time away from monitoring. These may have been scheduled breaks, informal breaks, tape management duties, admin tasks, or attention to other non-CCTV activities, such as the monitoring of alarms.

Qualitative interviews

During each control room shift a semi-structured interview (see Appendix D) was conducted with at least one operator. If there were two researchers covering the same shift, two operators were interviewed. The interviews aimed to give an insight into the working practices of the operators: what procedures they used when monitoring the cameras; what they specifically look out for; how they spotted incidents; whether they followed any standard procedures/objectives as laid out in the Code of Practice; what training they received; and how they viewed their working relationship with the police. These are a few of many topics investigated throughout the interviews.

Researcher observations

Throughout the study, the researchers observed the working practices of the operators; how they went about the monitoring of an area; whether they worked together effectively; in what circumstances they contacted the police; and generally, whether they did in practice what they claimed they did in the interviews. The researchers followed an observational guide (see Appendix E), which identified specific areas of operator/control room working practices to observe.

⁵ The decision to define an incident as a target monitored for one minute or more was taken from: Norris, C. and Armstrong, G. (1998): *CCTV and the Social Structuring of Surveillance*. In Norris, C., Moran, J. and Armstrong, G (eds) *Surveillance, Closed Circuit Television, and Social Control*. Aldershot: Ashgate.

3. Control room ownership

CCTV control rooms are generally 'owned' by local authorities, police forces or both where ownership is defined as the body managing the control room. Ownership shapes the context in which CCTV practitioners⁶ operate and underlies many of the issues discussed throughout this report.

When the local authority took sole responsibility for the management of the control room, as it did in all but three of the control rooms observed, police officers, the group most likely to respond to whatever operators find, could be distanced from day-to-day operations. This has important implications not least when the main aims of the control room include the identification and apprehension of offenders. Where there was co-operation this could take various forms and conferred various benefits. But generally it made it easier to guide operators' work, to draw on police intelligence on crime and to feed back details of incidents and intelligence to the police.

In practice, local authority-owned control rooms often faced difficulties in establishing effective links with the police and struggled to involve the police in the strategic direction of their control rooms. A lack of day-to-day police input within local authority-owned control rooms raises two key issues, both of which will be highlighted throughout this report as having adverse impacts on the operation of the control rooms.

1. A lack of formal and informal contact between police officers and control room operators evidenced in local authority control rooms impacted on the exchange of information. It will be highlighted that where there was contact between the police and the control room, the operators found it beneficial to tap into the police's knowledge of an area, including its crime profiles, problem individuals and known hotspots. However, this was noticeably lacking in many of the control rooms observed.
2. Local authorities must negotiate access to effective communications systems such as police radios, whereas a police-owned control room automatically has use of them. Reluctance on the part of the police to allow civilians access to information considered confidential caused problems in a large number of control rooms under observation. As a result, three of the thirteen had no police radio access. This issue is discussed at length in the communications chapter, Chapter 7.

⁶ Practitioners being the control room staff; including the operators, supervisors, and management.

4. Control room design

Two main aspects of control room design impacted on operational effectiveness:

- numbers of cameras, monitors and operators
- the organisation of monitoring

Numbers of cameras, monitors and operators

Operators predominantly used a bank of wall monitors to get a quick snapshot of the scene in the areas under surveillance. However, in the control rooms with a high number of cameras, it was not always possible to display all the cameras on the bank of monitors. One control room had over 500 cameras, displayed on approximately 50 screens, so only around ten per cent of the geographical area was included in the operators' snapshot. Greater use of quadded⁷ screens, or in more extreme cases, the displaying of *more* than four images per screen, can enable more cameras to be displayed on wall monitors. However, this reduces the size of the image on the wall monitor making it more difficult to spot incidents. In another example, 175 cameras were displayed on just ten wall monitors, thus, even in quadded format, it was not possible to display all cameras at any one point in time. This seriously compromised the operators' ability to detect suspicious activity at a glance.

Operators performed active monitoring by continuously calling up cameras on a spot monitor and using them to explore the geographical area. The number of spot monitors per operator varied between one and four across the control rooms. Multiple spot monitors were advantageous to the operators as they could:

1. passively observe an incident whilst actively monitoring other areas;
2. observe incidents using more than one camera.

The number of cameras per operator varied widely across the control rooms. In eight of the control rooms surveyed, operators were responsible for no more than 90 cameras, which allowed every camera to be actively monitored a number of times during each shift. In three control rooms, however, there were too many cameras per operator and it was harder for operators to spot an incident. In one control room, operators were responsible for monitoring as many as 105 cameras, spread out over three town centres, the result being that many of the cameras were left unmonitored for long periods of time. A similar scenario was observed for the monitoring of one residential area, where one operator was responsible for 175 cameras. In another control room, operators were responsible for monitoring between 123 and 153 static car park cameras. This resulted in the system being used primarily in reactive⁸ mode.

Organisation of monitoring

Aspects of control room layout relating both to the disposition of the hardware and the way in which monitoring was organised by control room managers influenced monitoring patterns.

Three distinct types of control room structure were noted during the study.

1. All operators can access images from all cameras.
2. All operators can access images from all cameras, but each operator has responsibility for particular geographical areas.
3. The control room is divided into sections dedicated to the monitoring of specific geographical areas, so that each monitoring station can access images from a fixed

⁷ Quadded screens display four images on one monitor in a grid format.

⁸ A reactive system is one where operators rely on receiving intelligence from external agencies to direct their surveillance, or make use of recorded footage to view incidents retrospectively.

set of cameras. In practice, this often separates the monitoring of town centre and residential areas, or two town centres with differing levels of activity.

There were advantages and disadvantages to each design:

The first design enabled any operator to respond to a call from an external agency such as the police, retail/pub radio (radio links between shops or public houses in the area and the CCTV control room) or wardens. Operators also worked together as a team to ensure continuity of evidence; while one tracked the development of an incident, the others ensured that the next camera needed in the sequence was pointing in the right direction.

The main disadvantage of operators being free to monitor at will was that they tended to favour the monitoring of town/city centres over the residential areas. It has been recognised that it makes sense to concentrate resources on the monitoring of town/city centres as they generally suffer higher levels of criminal activity than residential areas; however, system designers, control room managers, and even control room operators need to be aware that when an aim of a residential system is to increase the detection of crime, this is unlikely to be achieved when active monitoring resources are focused predominantly on the town/city centres.

The second structure ensured that all areas were monitored by a dedicated operator while still enabling the operators to work as a team when dealing with more serious incidents. This set-up was identified as the most effective; however, there is a caveat. In one control room, the operator responsible for monitoring the residential areas was also given a number of additional responsibilities, such as dealing with the alarm monitoring station, tape management and attending to police visits. Although these are key tasks within the operation of a control room, consideration must again be given to whether the set-up helps to achieve the system's objectives. In the example, the extra responsibilities regularly interfered with the proactive monitoring of the area, which was problematic considering that the detection of incidents was a key objective.

In the third set-up each operator was assigned a specific monitoring station, which received images from certain cameras, so reducing the likelihood that operators would be distracted into displaying other cameras on their spot monitors. This method was applied in four control rooms. However, in three of these control rooms, there was no dedicated operator for the residential area station, which meant it was left unmonitored for long periods of time. As a result, in one control room for instance, the total amount of time spent monitoring incidents in the residential area was just 2.6 per cent of total monitoring time.

Thus, the layout of the control room impacts principally on the attention that cameras in particular geographical areas receive. However, the attention paid to particular areas also depends on the decisions that control room operators make; these are discussed in Chapter 6 (Operators' working practices).

Summary

In summary, observation of the various sizes and layouts of control rooms raised a number of issues, many of which had an impact on the effectiveness of systems as a whole.

First, the probability of spotting an incident or providing useable recordings was reduced in those control rooms with high camera-to-operator and camera-to-monitor ratios.

Second, control rooms seemed to work most effectively when operators were able to access all cameras from every station in the control room. This enabled the operators not only to work together when dealing with incidents, but also to take responsibility for separate areas when performing general surveillance.

Third, when operators took responsibility for monitoring specific geographical areas, the allocation of extra responsibilities, such as tape management, administration and dealing with visitors, to operators monitoring the 'quietest' areas, compromised monitoring levels in those

areas. This was particularly problematic when the detection of criminal activity was the key objective of the system.

Finally, having distinct, segregated groups of cameras within the control room can work effectively if there is a dedicated operator for each monitoring station.

5. Control room management

The importance of management

Control room management was identified as the most important determinant of whether a CCTV scheme met its objectives, for two main reasons. First, the control room manager can exert continuous direct control over the operators, the communication systems between the operators and the outside world, and the evidence-handling systems they use. Second, although the manager may have no influence over control room design or ownership, which will usually have been decided before he or she has been appointed, he or she can address any potential problems arising from these. For example, in the last chapter it was noted that monitoring practices can be determined at the design stage, but there is scope for changing them if they are not appropriate to meeting objectives, for instance by encouraging operators to adopt monitoring practices which prioritise specific geographical areas.

Management structure

Six of the thirteen control rooms evaluated employed a full-time dedicated control room manager, but only four of these were involved in day-to-day operations, supervising staff and carrying out the administrative tasks, such as setting shift rotas. Most control rooms were left without effective hands-on control, where the control room manager role was either not filled, or where there was only strategic management of the control room.

Five control room managers were part-time in the role. Some of these had other duties that were complementary (for example, a Town Centre Manager managed a town centre CCTV scheme). In one local authority, the role of control room manager fell to the Head of Traffic Management and the CCTV system was very low in his priorities, as one operator stated:

The Traffic management head guy is in charge [of the control room]; he does not come down very often. We run our own department, and when he comes down and we raise issues with him, he does not seem interested.

The operators in this control room effectively had no line manager on site and one effect of this was that routine administrative tasks were neglected. During the course of the evaluation, the control room ran out of evidence bags, so preventing officers from taking tapes for evidential purposes from the control room.

Seven control rooms had supervisors (or assistant managers) and their roles varied. In two control rooms, the supervisors' roles were similar to that of a control room manager, in that they attended strategic meetings and acted as a point of contact for the police. In general, the supervisors dealt with the administration of the control room, in particular staff rotas and operator holidays. The role of supervisor was particularly important when a control room had a part-time manager, as he could carry out many of the essential duties of a control room manager. The creation of the post of supervisor in one control room enabled a management representative to attend retail radio meetings that had not previously been attended. However, it is important to ensure that any involvement by supervisors in monitoring duties does not distract them from essential administrative work, as one supervisor stated:

Seventy five per cent of my shifts are sometimes spent on administration: on a weekday shift and on night shifts this can still be 25 per cent of the shift. The manager is trying to make my role non-monitoring so that I have enough time to do all the things asked of me.

Two of the control rooms employed a 'shift supervisor' who provided leadership on individual shifts. One control room had two supervisors with very different outlooks: one was able to manage the operators properly and to ensure that appropriate breaks were taken and that active monitoring occurred, while the other had been promoted from within and also acted as an operator. He was effectively 'one of the boys', and therefore reluctant to enforce rules and

regulations on his own colleagues. He was observed allowing operators to set up and watch television for the majority of an eight-hour shift.

In two of the control rooms, the operators had taken over some of the managerial duties and self-managed their own shift rotas and cover for staff absence. Operators were able to carry out these tasks effectively in both control rooms, and in one case this contributed to operators developing a sense of pride in their work, as one operator stated: "All the operators want to make this control room as professional as possible and it is down to us to ensure this...we have made this control room, not the management."

Although operators could carry out managerial tasks, these duties took them away from proactive monitoring and this affected the schemes' ability to meet key objectives, such as the detection of crime.

Management competence

The research identified four areas of management competence that influenced the effectiveness of control room operation:

- staff management skills;
- operational knowledge of CCTV systems;
- technical expertise;
- relationship-building with external agencies, particularly the police.

Staff management skills

A number of staff management skills helped generate and maintain staff morale. Where managers displayed good administrative skills when handling shift schedules, and were adept at organising staff and ensuring the control room was appropriately staffed, operators worked more efficiently. Management in one control room produced a rota for weekday shifts (09.00-17.00) allocating set duties for operators and specified break times. This effectively ensured that operators took the allotted break time and that all control room tasks were completed during the shifts.

Issues were raised concerning communication between the operators and the management. A number of operators complained that their managers did not listen and were not conscious of their concerns, and were dismissive of requests for training. In one control room, the manager had alienated the operators and communication between the two parties had broken down, as the following comments by an operator highlight:

I know this place inside out...he (control room manager) hasn't got a clue...anything good round here has been done by us – he has done nothing...We end up sorting stuff out cos he does nothing or doesn't communicate. He has never once sat down and said "how can we progress this?" He thinks we're trying to undermine him – he calls us the C brothers and it's not a term of endearment.

Technical expertise

Managers required a grasp of technical issues within CCTV control rooms. On a basic level, it was noticeable that they needed to know how to operate the control room equipment, as they were required to provide guidance to new operators, and also to provide police officers with copies of evidence tapes when required. Where managers had technical expertise, they were able to work with contractors to resolve technical problems, and to develop the control room's technical capabilities.

In contrast, the following comment from an operator in another control room illustrates what can occur if such expertise is missing:

The manager is useless. When I had just started, the police came in asking for a copy of a tape, I did not know how to operate the equipment, nor did any of the other operators. We called the manager and he comes down, he was clueless, it was all a bit embarrassing.

Building relationships with external agencies

Where the managers forged good links with relevant agencies, this increased the flow of intelligence coming into the control room. When the aims and objectives of the control room were to reduce crime and disorder, effective lines of communication with the police were essential.

Managers in four of the projects were able to attend police strategy meetings and this proved vital for developing a good working relationship between the two agencies. It also facilitated a police input into the operational running of the control room.

The majority of CCTV control rooms addressed retail crime with the aid of retail radio. A good working relationships with retail radio users was essential, as this provided a good source of intelligence for operators. One of the principal methods for achieving this was through attendance at meetings held by the system users. In the case of one control room, the manager sent a senior operator who ably exploited the opportunity to exchange information with other users. For example, when trying to locate a target, CCTV operators required information provided over the radios in a certain order: initially the target's location then a description. Through these meetings the senior operator was able to ensure that this procedure was followed.

Time spent in the control room

Where managers were based in, or regularly visited, the control room, operational and strategic problems could be shared and resolved. One control room extended its monitoring responsibilities and employed a dedicated control room manager. The manager moved his office into the control room and the management team changed their working hours to shift work. This created greater interaction between the management team and staff, and facilitated the development of an effective informal system of information-sharing between the two parties, as illustrated by one control room operator:

We see them at the start of shift [referring to management staff] and sometimes they come in really early and you catch them then. Previously I never saw management doing late shifts. One assistant I never saw in two and a half years. I spoke to him on the phone and he was not very good. We've now started modified shifts and you get the chance to see them, and they can speak to you.

One project consisted of three control rooms, the manager being based in one. Although his remit was to supervise all three control rooms, he struggled to do so, partly because of the distance between them. One operator illustrated the problem:

...there is a lack of management and supervision...people get away with a lot. One guy had been coming into work drunk – he'd have a drink in the morning, and used to stink the office out, which looked bad especially when we had other people coming in...he also made racist remarks and he was an ex-copper...so I reported him. Nothing was done about it to begin with, I expected the supervisor to inform the manager but he hadn't, so I went to the manager myself.

Code of Practice

The content and application of the Code of Practice underpins many of the findings in this report. All the control rooms had a Code of Practice, but the content varied (supporting the findings of Bulos and Sarno, 1996:17; Norris and Armstrong, 1999:100).

The Code of Practice should lay out effective and appropriate monitoring protocols, and it is a function of management to check that the principles are adhered to. In these Codes there was generally a list of the aims of the control room and the agencies that are signed up to the protocol, and their responsibilities. In many, there was information regarding the relevant legislation: how monitoring should be performed and what should be avoided.

However, the Codes of Practice were generally not exhaustive. Of the Codes of Practice in eleven control rooms, only one provided detailed guidance to operators on how to collect images in line with the police's requirements for evidential quality (Aldridge, 1994). In this control room, the management enforced the principles of the Code of Practice, producing a standardised style of monitoring for all operators.

Generally, the Code of Practice was available to the operators as a point of reference, but they did not typically consult the document and rarely did so without encouragement. This had various consequences for working practices, which are discussed in more detail in the next chapter.

Summary

This chapter explored the importance of the presence of a dedicated control room manager. The presence of a control room manager on both an operational and strategic level, made noticeable differences to the organisation, efficiency and knowledge of the operators, as well as establishing links with the key external agencies. A number of issues emerged.

First, managers with a number of different roles often neglected their control room responsibilities. The alternative was for managers to allot a dedicated amount of time to their duties and ensure that everyone involved was aware of this.

Second, managers who were familiar with the daily tasks and responsibilities of operators, and who liaised well with staff, played a crucial role in generating and maintaining staff morale. This also helped to ensure that control room tasks were completed properly.

Third, managers with a good level of technical expertise often had better working relationships with contractors. This also enabled management to train operators in equipment use and ensured that they sent good evidence to the police.

Finally, managers who developed and maintained effective links with external agencies, especially the police, increased the amount and quality of intelligence entering the control room.

6. Operators' working practices

Operators are crucial to the effective running of a CCTV control room. They are responsible for the hands-on operation of the system, and are the major human element in a predominantly technology-based crime reduction measure. They are responsible for locating incidents and making decisions about how to act on what they see. All the control rooms under evaluation employed operators, and this chapter will discuss the factors that determined their effectiveness.

Pay and working hours

CCTV operators were generally poorly paid (see also Norris and Armstrong, 1999), the hourly pay rate ranging from £5.00 to £8.12. Only one control room paid an annual salary and that ranged from £14,817 to £16,515. A control room in the London area paid operators £5.75 per hour and supervisors 50 pence an hour extra.

In some control rooms this low level of pay resulted in a high turnover of staff, and operators often worked overtime to supplement their wages. In two control rooms, operators reported working consecutive shifts; this meant 16 hours of continuous work. When operators worked extended shifts it tended to lead to reduced levels of concentration and of monitoring activity.

Types of operators

Operators were employed directly by a local authority in six control rooms and hired through private security firms in seven. Local authorities offered more benefits to the operators such as sickness pay, pension schemes, and shift allowance for anti-social hours. Three of the local authorities offered these additional benefits, whereas the security firms rarely did.

Three control rooms employed agency staff on temporary contracts, and police officers worked to varying degrees within three of the control rooms; this had an impact upon the operation of the control room, as indicated below.

Police officers

Police officers sometimes conducted special operations and this happened on a regular basis in one control room. Two control rooms regularly had police officers working in them, either working a standard shift pattern similar to that of the civilian operators, or working at busier times. In one control room there were three or four police officers on light duties working various shifts, usually one per day. One operator stated: " I don't know how we would cope without the police officers on duty."

The presence of officers in the control room had a positive impact as they shared their expertise with operators, deployed officers to incidents, and provided intelligence directly to officers in the target area, using a police radio or mobile phone. Operators commented:

I quite enjoy it [referring to having a police officer in control room]; they give an insight we don't have. They recognise individuals. When we called him [referring to police officer] over to car parks to view the target, he knew the individual and he could get police response quick.

When the police are in here, it's much better because they know what they're looking for and they can liaise with people [police] on the ground; they know more what they're looking for, the local characters.

Police know every nook and cranny, if we lose somebody when tracking them, they will tell us look up here or there. They have foot patrol knowledge.

It makes a huge difference having police presence in the control room. Messages can be relayed directly to officers on the ground and incidents can be dealt with almost immediately.

The police officers employed in the control room were also positive:

It would be better if there was a policeman on every shift. It would decrease the amount of time it takes to get through to the CAD⁹ room... To be truly proactive you need a consistent police presence [in a control room] to help develop policing in an area.

Temporary agency staff

Three control rooms contracted in temporary staff from agencies. In one case they clearly made a valuable contribution. With close supervision they learnt how to operate the equipment effectively. In two other control rooms, temporary staff lacked knowledge of relevant legislation and used the system in an inappropriate manner, as illustrated by the following comments:

When I first started, I was like zooming in on people and windows, and then afterwards I realised I shouldn't and so I don't do it anymore.

...considerable use has been made of agency staff. Not surprisingly, the quality of these temporary staff has been variable but, much more importantly, their inevitable turnover militates against real progress with intelligence-led monitoring. In addition, they do not remain long enough to gain familiarity with control room systems and key protocols in the Council/Police Code of Practice.¹⁰

It may not be economically efficient for employers to train operators if they are only performing their duties on a temporary basis, and this can result in temporary staff being used to make up the numbers on a shift whilst constituting a liability to the control room. This is illustrated by the following response by an operator when asked what constituted a good day in a control room:

If all the shifts are covered, sometimes you may as well as be on your own...the quality of the temporary staff can be very low...but it's not always their fault...there's no proper training and there are too many little bits to do and learn about.

Duties of operators

The duties of the operators varied considerably, not only across the control rooms, but also within the individual control rooms. They had a range of responsibilities, which included the active spotting of live incidents, the logging of incidents, communicating with a range of individuals within and outside the control room, tape management, preparing evidence, monitoring and reporting faults, and controlling entry to and exit from the control room itself.

Monitoring practices

The primary duties of the majority of operators observed was the active monitoring of images to locate live incidents, and reaction to information received from external agencies. Table 6.1 illustrates the level of operator monitoring activities, and the number and duration of incidents and offences monitored.¹¹

⁹ CAD = Computer Aided Dispatch.

¹⁰ Taken from a Draft Report on CCTV Review, which was circulated to all members of the CCTV Strategy Group.

¹¹ Incidents can be anything monitored by the operator, such as suspicious behaviour or known offenders. Offences are those incidents that actually turn out to be criminal.

Table 6.1: Operator incident monitoring activities.

Control Room	Total observation time (minutes)	Number of incidents monitored	Total time spent watching incidents (minutes)	Percentage of each operator's time spent watching incidents	Number of offences monitored	Total time spent watching offences (minutes)	Percentage of each operator's time spent watching offences
Dual estate	2,220	65	559	25.2	21	196	9.0
Eastcap estate	2,880	178	1,677	58.2	56	621	21.6
Westcap estate	2,880	42	279	9.7	9	39	1.0
Borough town	2,640	53	556	21.1	27	346	13.1
Deploy estate	2,880	183	1,425	49.5	92	830	28.8
Northern estate	2,880	158	901	31.3	55	415	14.4
Hawkeye	6,480	17	56	0.9	2	8	0.1
City outskirts	2,880	181	1,429	49.6	64	493	17.1
Market/Shire town	1,710	20	166	9.7	10	58	4.0
South city	2,880	142	721	25	62	365	12.7
Southcap estate	2,880	119	710	24.6	38	269	9.3
Total	553.5 hours	1,158	8,479		436	3,640	

Across the thirteen control rooms, operators spent between 0.9 per cent and 58 per cent of their time monitoring incidents and, more importantly, between 0.1 per cent and 29 per cent of their time monitoring actual offences. There were a number of reasons for the disparities between control rooms and these are discussed below.

Reactive systems

One of the systems (Hawkeye) was designed to function primarily as a reactive system. The cameras were installed to collect evidence of any offence that occurred in the intervention area. The cameras provided blanket coverage of the car parks and were tested by the Rotakin method.¹² In this control room, operators spent less than one per cent of their time

¹² The Rotakin method is a test used to ensure that anything within view of the camera will be of sufficient size to make possible at least the detection of a target. For more information, see Aldridge, J. (1994): *CCTV Operational Requirements Manual*, PSDB 17/94. London: Home Office.

monitoring incidents. Each operator was responsible for monitoring approximately 150 static car park cameras and with a total of only 15-16 wall monitors in the control room active monitoring was difficult. The cameras were static and operators found them very boring to monitor: “and I’ll be honest with you, you can’t stare at the screens (anyway) – I’d be asleep in fifteen minutes”.

Prolonged surveillance of targets

In one control room, operators spent between thirty minutes and one hour tracking a number of known offenders around the intervention area during the day shifts. The operators taunted the individuals by wiggling the cameras, making it known they were being followed. These prolonged periods of surveillance did not result in operators spotting offences and were an ineffective use of the system in terms of detecting crime, although such camera wiggling could have deterred offenders.

Effective use of intelligence

The operators working in the Eastcap estate control room spent the largest slice of their time monitoring incidents and offences. The main reason for this was that they were prompted into action by the retail and pub radio systems, and had a police radio in the control room that initiated 22 per cent of the incident observations (discussed in more detail below).

Additional responsibilities

Operators were often taken away from active monitoring by additional responsibilities, such as alarms monitoring and tape management. This does not necessarily create a problem in quieter periods (indeed they are an essential part of an operators’ duties and can be an effective use of time), but if excessive, or if the duties were carried out inefficiently, they could seriously compromise the activities of the CCTV control room. This was a problem in three control rooms (Westcap estate, Southcap estate, and Borough town) the reasons for which will be discussed below.

Table 6.2 shows the time operators spent away from monitoring whilst in the control room. It can be seen that most spent approximately 20 per cent of their time away from the screen, although the time spent away from the screens was noticeably higher in three control rooms (29 per cent and above), and clearly lower in two (16 per cent and below).

Table 6.2: Proportion of shift time spent performing tasks other than monitoring the screens.

Control Room ¹³	Additional duties to CCTV? (Yes / No)	Total operator time spent away from screen (Hours)	Total operator time in control room ¹⁴ (hours)	Percentage of time operator is away from screens
Dual estate	N	8	36	22
Eastcap estate	N	17.75	96	19
Westcap estate	Y*	52.5	94.5	56
Borough town	N	19.75	54	37
Deploy estate	N	36	132	22
Northern estate	Y**	17.15	118	16
City outskirts	N	8	36	22
Market/Shire town	N	2	28.5	7
South city	N	35.5	212.75	17
Southcap estate	N	52.6	181	29

* Plus out of hours council services

** Plus alarms monitoring

Multiple roles

As can be seen from the table, in two control rooms operators had multiple roles. In one the operators were responsible for responding to the council's noise and nuisance calls, and monitored the screens in the control room for just 44 per cent of their time. Some operators spent only one hour per shift monitoring the cameras. In another control room, operators were responsible for responding to alarms activated in council properties, and they commented that this distracted them from their monitoring duties for large parts of some shifts.

¹³ Hawkeye was not included as it was a reactive system, thus it was not essential to measure how often the cameras were monitored proactively.

¹⁴ The total operator time in the control rooms takes into account the number of operators present, as well as the total time spent observing the operators. For example, Northern estate was observed for 48 hours, and there were two to three operators per shift, therefore the total operator monitoring time was 118 hours.

Tape management

Seven of the CCTV systems used analogue as opposed to digital technology to record incidents, and in these control rooms tape management was part of an operator's daily duties. The issue of tape management is discussed in more detail in Chapter 8. In one control room operators spent 37 per cent of their time away from screens; 35 per cent¹⁵ of all time away involved tape management duties.

Viewing requests

Operators were also typically responsible for dealing with viewing requests from the police and for assisting officers in this work. This is an important task carried out by the operators, as producing footage that can be used as evidence is a crucial part of an effective system. However, it is a time-consuming task, especially with analogue systems, and in some cases prevented operators from active monitoring of the cameras for long periods of time. During the evaluation, one operator had to assist the police in finding an incident, which took him out of the control room for ninety minutes.

Digital systems were much more efficient in terms of finding incidents, as mentioned by one operator:

From what I understand, the system was designed three to four years ago, so it is based on old technology. I think they should phase out these old recording systems and go over to digital. It takes so long to find things. You can find things so much more easily on digital.

Illegitimate activities

In two of the control rooms, unsupervised operators engaged in a number of illegitimate activities, which disrupted active monitoring. These activities, undertaken when management were not present in the control room, or unlikely to visit it, disrupted the operation of both control rooms for long periods during weekend and night shifts. During the evaluation, operators were observed watching television in two of the control rooms. In one case this resulted in three operators spending 70 per cent of one shift away from monitoring.

Operators were observed reading newspapers, spending excessive time chatting to visitors, playing on games consoles, leaving shifts early, and falling asleep whilst on shift. As one operator stated:

Some of the operators have been here five or six years or something, and me and [name of other operator] don't even have one year [experience] between us, but we are considered the best team here. Partly that's because, and I shouldn't say this, but one of the other guys whose been here longest, he comes in here and sleeps.

Priority monitoring

Some operators monitored a range of different types of area from one control room, combining images from town/city centres with those from residential areas, car parks and hospitals. In ten of the thirteen control rooms observed, a mixture of types of areas were monitored. During the observations, it became apparent that the operation of the control room was predominantly organised in order to monitor busier areas at the expense of less busy ones.

¹⁵ This control room monitored an unusually high number of cameras (520), which accounted for the high volume of tape change time.

Table 6.3 shows the relationship between the projects being evaluated¹⁶ and the control room as a whole. Column B outlines the type of area under evaluation; Column C gives the ratio of cameras covering the evaluated area to those in the whole control room; Column D shows the proportion of the total number of incidents monitored by the control room that relate to the evaluated area; and Column E shows the difference between C and D.

Table 6.3: Proportion of incidents monitored within the target area compared to the proportion of cameras in the control room.

Column A Control room	Column B System type	Column C Proportion of cameras in the evaluated area out of total in control room	Column D Proportion of incidents monitored in the evaluated area compared to the control room as a whole	Column E Difference between proportion of cameras and proportion of incidents in the evaluated area
Market/Shire town	Town and city centre	78%	100%	+22%
South city		19%	77%	+58%
Borough town*		8%	6%	-2%
City outskirts	City centre and residential	29%	20%	-9%
Deploy estate	Residential	6%	2.6%	-3.4%
Dual estate		29%	14%	-15%
Westcap estate		20%	16%	-4%
Southcap estate		54%	3.5%	-50.5%
Eastcap estate		10%	11%	+1%
Northern estate		15%	7%	-8%

*Monitored from a control room that also monitored a busier town centre.

The table shows that, generally, the proportion of incidents monitored in town/city centres was higher than the proportion of cameras in the control room. On the other hand, lower than proportionate numbers of incidents were monitored in five of the six residential areas.

The Borough town control room monitored the busier town centre at the expense of the less busy one. In contrast, South city is a city centre system, which clearly dominated the activities in that control room. The city centre cameras made up just 19 per cent of the total within the control room, yet 77 per cent of the total incidents detected in the control room were monitored with these cameras. In fact, two out of three town/city centre projects experienced disproportionately high numbers of monitored incidents.

¹⁶ This control room study was conducted as part of a broader evaluation of CCTV (See Gill *et al*, 2004). Therefore, each control room had within it one area that was under evaluation as part of the broader study. In ten control rooms the evaluated area was monitored in a control room that also monitored other non-evaluated areas; therefore, it was possible to measure the difference in levels of monitoring between the evaluated and non-evaluated areas of the control rooms.

The priority monitoring of town/city centres meant that disproportionately low numbers of incidents were monitored in the residential areas. In the Southcap estate control room the evaluated cameras made up 54 per cent of the total within the control room, yet only 3.5 per cent of incidents monitored within the control room as a whole were monitored from these cameras; a deficit of 50.5 per cent.

A control room manager tellingly stated of a redeployable CCTV system:

It's a completely useless system – I don't like letting operators waste time on it... We're never told when the cameras are being moved, so if we hear about an incident we want to see, we don't know if the cameras are there or not. It's a waste of time.

It is important to note that, in the absence of clearly stated objectives, there can be no 'right' and 'wrong' levels of monitoring. Decisions made to separate monitoring of residential areas within the control room, or to prioritise town/city centre monitoring areas, are important, however, and need to be thought through. In the absence of objectives and guidance, many control room operators and managers appear to have decided, based on some experience, that town and city centres are more worthy of monitoring time than residential areas.

Logging incidents

One important control room duty was the logging of incidents. During the control room studies, an average of 24 per cent of the incidents observed by researchers were logged, ranging from five per cent to 72 per cent across the projects. Five of the six residential areas experienced little active detection of incidents. A number of overlapping factors within the control room could account for the disproportionately high monitoring of town/city centres:

1. Operators did not consider the residential areas interesting to monitor in view of the lack of activity:

*No-one ever wants to look at the housing cameras – there's nothing really going on.
I tell you something, this X scheme is boring – I've spent an hour on this and seen half a dozen people come home from work...why did we spend so much money on this scheme? I've just patrolled the whole of the estate and seen no-one.*
2. Operators reported a lack of crime problems in the residential area: "CCTV in X is not justified, because there wasn't a crime problem to start with".
3. Town/city centres predominantly experienced a greater volume of crimes than residential areas, and higher levels of intelligence from the police meant that more of these crimes were brought to the attention of the operators. An operator stated: "It is really difficult to spend time monitoring the x and x cameras on a weekend late shift because z is so busy...but it's OK, because they are always recorded."
4. During office hours (0900 –1700) operators spent a large proportion of time responding to communications on the town/city centre-based retail radio system. As a result, in six of the control rooms under evaluation, residential areas were monitored infrequently.

Unfortunately [name retail area] takes up most of our time. We have to look at [name residential area] and [name residential area], but the radio starts chirping away and you have to jump back to [name retail area]. In 30 minutes we generally spend at least 25 minutes on [name retail area]; that is where the action is.
5. Operators lacked knowledge both of the geography and crime problems of the residential areas. These knowledge gaps impacted on the efficiency of monitoring. One operator stated: "These are the worst cameras you can work on. I don't know the area, or the control rooms."

The logs had a number of important purposes:

- to enable the police, or other external agencies, to track an incident after the event;
- to check what the operators had been monitoring and for how long;
- to conduct an audit to check that the incidents had been recorded in an appropriate manner;
- for data protection purposes, operators used the logbook to explain and justify why they had focussed on a target;
- to pass on intelligence between operators on different shifts;
- to be used as evidence.

The main factors that were found to influence the number of incidents logged were managerial input and the type of logging system used. In the control room with the highest rate of logging of incidents (72 per cent), the manager was very active. Operators had to justify their selection of targets in the logbooks and this resulted in a large proportion of incidents being logged.

When a control room adopted a complicated and time consuming logging process this reduced the number of incidents logged. All the control rooms kept handwritten logbooks. All but one had an effective logging system that allowed operators to make quick entries with minimal distraction from active monitoring. In one control room, the logging system entailed operators spending long periods of time making written records: "There are too many logs; four different sets of paperwork for everything. Logging incidents takes ages and its time we could be monitoring, it puts you off doing it."

All incidents required a report (a single side of A4 paper) to be written. This consisted of basic information (date, time, cameras used) and a fairly detailed description of the incident. They were supposed to be written at the end of the shift, during the handover period, or during quiet periods. Observation revealed that these logs were not generally completed during the handover periods, but during the shift, so taking the operators away from their monitoring duties.

Skills and knowledge

To be effective, an operator requires a range of skills and a specific knowledge base including:

- technical and operating skills to track targets effectively, obtain evidential quality images, and use communication links to pass on intelligence;
- geographical knowledge of the target area and camera locations;
- knowledge of crime-related activity in the area, so that they can direct their surveillance;
- knowledge of relevant legislation such as data protection laws, so that they can operate legally.

Technical skills

The technical skills required include the ability to:

- collect evidential standard images of targets as specified by the Police Scientific Development Branch (PSDB) (1994: 11) guidelines.¹⁷
- operate control room equipment to effectively track targets;

¹⁷ For recognition, images need to be 50 per cent of the screen, and for identification, the image must be 120 per cent of the screen.

- operate communication links.

The standard of the images recorded by operators varied between control rooms. It was important that operators were aware of the PSDB's guidelines on identification, recognition, detection, and monitoring of targets to ensure they collected evidence of an optimum standard. Operators displayed varying levels of skill in obtaining evidential quality recordings of incidents that they spotted. They were generally aware of the need to zoom in to collect a close up image of a target when an offence was being, or had been, committed, although this was more apparent in some control rooms than others.

Although individual operators were aware of the guidelines, knowledge on the part of all operators in the control rooms was clearly evident in only one control room, and was the result of training:

When on X security course, I was taught about image quality. The Home Office have certain requirements for evidential images. Take these people [operator points at screen] you can look at them at a distance and you can monitor them because they cannot be identified. You only really look at people to identify them if you really need to, because of obtrusiveness and stuff.

(I was) taught recognition, how much of a screen must be taken up for recognition and identification and how much for number plates.

In this case, the control room manager was an ex-police officer and spent time with the operators ensuring they collected evidence in line with PSDB and police requirements. In only one control room was there specific guidance on the PSDB requirements for evidential quality images, and the operators rarely referred to it.

Tracking targets

Operators tracked vehicles or people when they were suspicious of their activities, or when an offence had been committed. This occurred more in busy city/town centre areas where operators tracked targets and passed information to the police, shop security guards and pub door staff. Generally, operators were proficient at using the equipment to track targets and learnt how to do this by shadowing other operators. When operators were asked how they learnt to track offenders a typical response was: "I picked it up very fast when I started here". Operators were also good at working in conjunction with other operators to track offenders. Some worked in teams since they found it helpful for one operator to track the target and another to set up the next camera(s) in the tracking sequence.

It is a team job. You have to rely on your colleague to set up the next camera to allow continuity...it's like a game of chess, trying to guess the next move and anticipate actions.

Geographical knowledge

Clearly effective monitoring depends on operators knowing which cameras cover which areas.

Generally, learning the location and linkage of cameras did not take long, varying between two weeks and three months. Initially, operators spent time learning the camera positions and the areas they covered, including street names and local landmarks, and expanded this knowledge through experience.

It proved helpful to supply operators with a list detailing camera numbers and their locations, along with maps. Operators commented:

What we need is a big colour map on the wall, with all the cameras clearly marked.

(We) could do with more visual information about cameras...a large clear visual map with all the cameras on.

In one control room the operators had made their own map to assist newcomers in familiarising themselves with the camera layout. Operators used maps to locate targets when police passed on intelligence, and to aid them when directing police to targets. An operator referring to a graphic user interface (GUI)¹⁸ stated:

I use this (referring to a GUI) when the police phone and I don't know the street. I will say, which area (place name) for example, and I will go there on the system. Then I can easily see the street names and find it on the screen.

Systems located within city/town centres were generally easier to learn, as most operators were already familiar with the areas. Operators had less reason to be familiar with residential areas, especially if they did not live in them, or had no reason to visit them. In these circumstances it was often difficult for operators to gain a sufficient level of geographical knowledge to be able to monitor effectively.

They say it takes two months to get used to the cameras. I'm all right with the town centre ones, but still need to get to know about the out of town ones; I don't know the area which does not help.

Active monitoring of one residential area was prevented by the large number of cameras (175), and the fact that many of the operators were unfamiliar with the area.

Knowledge of crime-related activity

Operators built up a good understanding of the crime and disorder problems within a target area through experience and sharing information. Intelligence from the police was highly valued and obtained in a number of ways:

A police radio situated in the control room was invaluable. Although some forces restricted control room access to police radios because of fears about breaching data protection legislation, seven of the control rooms did have them. The radio allowed operators to monitor incidents before the police arrived at the scene, and they updated the police as the incident developed, capturing vital evidence.

Tasking sheets detailed the police's weekly priority areas and targeted offences. These were supplied on a regular basis¹⁹ to three control rooms. However, only one control room made good use of this form of intelligence; there the management placed the information on the monitoring station and actively encouraged the operators to use it.

Police officers who visited the control room to conduct special operations, or collect tapes, or who were scheduled to work in the control room, provided vital intelligence. Operators generally worked in conjunction with officers, which facilitated the exchange of intelligence.

Working with police is good for us to get their skills and knowledge. We have to try and understand the police jargon. The more we listen to it [police jargon] the more we understand them and this helps us when working with them [the police].

Where tasking sheets and police radio links provided a regular flow of intelligence into the control room, police officers' visits were usually less predictable, so this source of intelligence was unreliable:

¹⁸ A Graphic User Interface is a touchscreen computerised system, where the operator can simply select areas of maps, streets, buildings, and camera locations by touching the appropriate area of the map on the screen.

¹⁹ The tasking sheets were supplied on a weekly basis to two of the control rooms, and on a more *ad hoc* basis to another control room, usually two to three times a week.

The single biggest problem is the lack of intelligence fed through by the police and it's the police's fault. We only get information second hand when an officer visits. The guys would benefit from receiving intelligence more quickly and in a more systematic way.

Knowledge of relevant legislation

Control room operators require knowledge of relevant legislation (specifically the Data Protection Act (1998), the Human Rights Act 1998 and the Regulation of Investigatory Powers Act (2000)) to ensure that monitoring activities do not breach individuals' civil liberties. However, levels of knowledge varied and were often a product of shared wisdom amongst operators rather than formal instruction. Specific guidance about the Data Protection Act was given to operators in only one control room, and then in the form of a booklet about Data Protection legislation. The information it contained was insufficiently prescriptive and user friendly. An operator stated:

The biggest problem with the Data Protection Act is it's open to interpretation and the way it is interpreted can vary considerably from one place to another, and between one operator and another...There should be people monitoring what to do hands-on, rather than give out a booklet and told "there you are".

Such information should be contained in a control room's Code of Practice, although, as noted above, this must include guidance on how it is applied in practice.

Training

Given that at the time of the research there was no centralised standard for control room training, the quality, level and timing of delivery differed markedly from project to project.²⁰ In the majority of cases, experienced control room staff provided initial in-house training to new employees. This proved effective in giving operators an understanding of how the monitoring equipment operated and the basic camera positioning. Operators commented:

I shadowed existing operators for about two weeks...they taught me the camera numbers and where they all are. There is so much to learn, so I took it a bit at a time; the tape logs, using the computer to download information, and using the police phone.

Once you have learnt the basics, it's practice really. Like I say, we ask about training, but we are told that we don't need it...I haven't had anything. Basically we work it out for ourselves, which is better I think.

In six of the control rooms, in-house instruction was supplemented by organised external training courses. This involved a short course over a few days, and concentrated on relevant aspects of legislation, communication, patrolling, tape management and the principles that should guide monitoring behaviour. Throughout the research, operators consistently expressed the need for more training.

Operators were generally made aware of the legislation, but not how it related to their monitoring practices.

I want to go on another training course to learn about the law [as it applies to Monitoring CCTV]. I watch someone walk down the street, how do I know if I'm doing something wrong? All I've been told is "don't look in any windows". I used to get that security magazine, and I've seen courses about the law, about CCTV management advertised, but why should I pay for it?

²⁰ At the time of writing, the Security Industry Association was considering the licensing requirements, including competency standard for CCTV operators. In the future, operators employed by third parties will require a licence, and this will require the need to meet certain (as yet unspecified) competency standards.

In some cases the external training was supplied after the operators had been employed in the control room for a substantial period of time. This meant that operators were monitored whilst being ignorant of the relevant legislation. Some complained that training had come too late, when they already knew the job:

Training was not much use...I had been working here for some time by then, I already knew the job before I had the training.

I had been working 17 months before I got my training. They looked at different things; some things were of help, but it was mostly a waste of time. It was just so the management could say that you had done it.

Some operators received no formal training on the control room equipment. While they acquired basic skills, a lack of more detailed knowledge caused problems. In one case a switch was accidentally activated on the tape review unit, which meant that the equipment could only be operated by remote control. The operators were unaware of the cause of the problem and could not operate the machine. As a consequence, it was 'down' for three days. When an engineer came out he simply flicked the switch and the machine was operational again.

Surprisingly, given its importance, operators often did not receive training on identifying suspicious behaviour, although as has been noted earlier many operators appeared to carry out this task well. Most claimed that they developed this skill on the job. Some said that they learned a lot from the police. For example:

It helps having the police in here, as they tell us stuff. That bench there [operator points at screen] is where the pimps sit and we could just think they were anybody and ignore them.

Summary

This chapter has explored the working practices of control room operators and the wide diversity of operating styles, knowledge, skills, and attitudes that were observed. This was an area that demanded a great deal of attention, hence the amount of information and detail included. A number of key issues were identified.

First, employing a police officer in the control room during busy periods was shown to help operators to target surveillance more effectively and to elicit a more efficient response to incidents. This was further aided by the presence of a police radio, as operators were observed to be more effective at spotting incidents when they were acting on (police) intelligence.

Second, town/city centres were proactively monitored more than residential areas, the impact of which was dependent upon the stated objectives of the schemes. If there are no stated objectives, the strategic decision to concentrate resources on busier areas can be seen as an instance of good practice.

Third, where operators consistently logged anything they had monitored for any length of time, or that was of interest to the police, the logs were found to be important information sources for operators, the police and control room managers.

Fourth, operators were often distracted from their monitoring duties. Tasks such as tape management, searching for incidents and other administrative tasks are important, but they need to be managed so as to optimise operator efficiency.

Fifth, it was observed that because the work of operators was often routine, there was a need to ensure that they were placed in a stimulating environment with regular contact with external agencies, and with management support. Where this was not the case the operators often got bored and sometimes engaged in illegitimate activities.

Finally, the operators were often not aware of the need to meet the police requirements for evidential quality images, and only a minority of the control rooms under observation provided instruction in the Code of Practice and relevant training. It is essential that operators have knowledge of the legislation that governs their monitoring behaviour.

7. Communication with external agencies

For many operators, a fundamental aspect of their job was their response to incidents detected, and/or their receiving of information from external agencies to direct surveillance. Crucial to this process were the communication links established with external agencies, in particular the police and the retail/pub radio networks. The probability of detecting an incident, as well as the efficiency with which incidents were dealt with, was heavily dependent upon the quality of information received from and passed on to external agencies.

This chapter will highlight the key sources of intelligence for operators, before moving on to discuss the various methods of communication with the police and retail/pub radio systems.

Incoming intelligence from external agencies

Table 7.1 shows the number and source of incidents identified during the control room observation. It shows that the majority of incidents viewed by the operators were revealed by active monitoring:

Table 7.1: The various methods by which incidents came to the attention of the operators

Control Room	Number of incidents	Per cent identified by operator	Per cent identified by the police	Per cent identified by retail radio	Per cent identified by pub radio	Per cent identified by other sources	Number of hours evaluated
Dual estate	65	83	0	15	2	0	37
Eastcap estate	178	62	22	11	4	1	48
Westcap estate	42	93	5	N/A	N/A	2	48
Borough town	53	51	8	13	25	1	44
Deploy estate	183	67	5	26	2	1	48
Northern estate	158	85	3	7	4	1	48
Hawkeye	17	94	0	N/A	N/A	6	108
City outskirts	181	81	0	14	4	1	48
Market/shire town	20	45	5	50	0	0	28.5
South city	142	66	6	20	1	7	48
Southcap estate	119	80	20*	0	0	0	48
Total	1,158	74	8	14	8	2	553.5

*During the control room study the police ran an Automatic number plate recognition operation in the control room, which partly accounts for this high figure, with ten incidents initiated by the operation.

Roughly three-quarters of all incidents across the thirteen control rooms were identified by operators. Police intelligence identified eight per cent of the incidents, but there were large disparities between control rooms. In three control rooms none of the incidents were identified by the police, but in two others over 20 per cent came from this source. The retail radio systems identified 14 per cent of the incidents monitored, and the pub radio systems accounted for eight per cent. The retail radio systems primarily notified operators when an offence had already been committed and helped security officers to track targets (see below).

Intelligence passed to the police

Table 7.2 shows the type and amount of intelligence passed from the operators to the police.

Table 7.2: Outgoing intelligence from the operators to the police.

Project	Number of incidents monitored by operator	Percentage of incidents passed to the police	Number of offences monitored by operators	Percentage of offences passed to police	Number of offences police already knew about ²¹	Number of non-offences ²² passed to police
Dual Estate	65	29	21	43	2	4
Eastcap estate	178	36	56	32	20	8
Westcap estate	42	0	9	0	1	0
Borough town	53	44	27	19	6	4
Deploy estate	183	30	92	11	17	6
Northern estate	158	38	55	24	8	6
Hawkeye	17	0	2	0	1	1
City outskirts	181	57	64	14	7	10
Market/Shire town	20	55	10	50	1	3
South city	142	42	62	32	10	3
Southcap estate	119	32	38	39	11	6
Total	1,158	35	436	24	84	51

²¹ The police had informed an operator of an offence via a police radio or a telephone. Therefore, the operator was required to record the offence and did not need to pass intelligence back to the police.

²² An incident is classified as a 'non-offence' when the operator had not viewed an actual offence being committed, but informs the police for preventative reasons.

Across the 13 control rooms, operators passed on intelligence in relation to 35 per cent of the incidents they viewed. On the other hand operators passed on intelligence concerning 24 per cent of the offences they viewed. Operators did not inform the police about all the offences they saw for a number of reasons.

- In the case of 84 (19 %) of offences, the police were already aware of them.
- Operators rarely informed the police about low-level incidents, such as anti-social behaviour.
- Operators were passing some intelligence to retail/pub radio users and allowing the security staff to take the appropriate action.
- Problems with communication links (see below) meant operators were not able to pass intelligence quickly and effectively to the police.
- The operators were not given sufficient guidance on when it was appropriate to pass intelligence to the police.

A proportion of the intelligence passed to the police concerned 'non-offences'. In some cases the action was primarily preventative, providing the police with the opportunity to act before an offence was committed. In others operators were carrying out a range of public services, including helping to locate missing children.

Communication links with the police

The amount and effectiveness of communication between the control room and the police depends on the type of communication links between the two and their working relationship. This section will examine the types of communication links utilised by operators when exchanging intelligence with the police. The three main forms of communication were:

1. police radio.
2. telephone calls to the 999 emergency number or police control;
3. passing of images to the police.

Police radio

The most effective form of communication was the police radio. Of the thirteen systems involved, only three made use of a two-way police radio link. However, seven control rooms utilised a one-way link, whereby the operators could listen in to police communications and direct their surveillance accordingly. This was the most common method of police radio communication. Three control rooms did not use police radio.

Although the presence of a two-way police radio link was the ideal set-up, a one-way link also had benefits.

- The police on the streets could directly address the control room and request surveillance of a certain target. Increasing police directed surveillance, in turn, increased the likelihood of detecting an incident and obtaining useable evidence.
- Operators became aware of incidents by listening to the police radio. This enabled the operator to respond more rapidly, and sometimes in advance of police arrival at the scene. Ten control rooms used a police radio during the control room study and the monitoring of ten per cent of 396 offences was prompted in this way.

The presence of a two-way radio link with the police had additional benefits, as operators could communicate directly with police officers on the ground, passing on information more efficiently and rapidly. This increased the probability of defusing incidents before they escalated, or increased the chances of catching the offender(s) in the act. The operators could communicate with police officers whilst they were dealing with the incident. For example, they could direct officers to stolen goods dropped by suspects, or identify the perpetrator(s) of an incident involving a large group of individuals.

Allowing police radios to be used in control rooms is a matter of debate at national level. Radios are seen as not only desirable, but essential for effective operation (Tyerman, 2002), providing the following are considered:

- operators are trained and confident in the use of the police radio. Communicating in proper form and efficiently in line with agreed procedures is vital;
- protocols must be in place between the control room and the police, advising on how the police will be contacted by the operators and in what situations and the operators must also sign a confidentiality agreement.

Police landline to 999 or Police Control

The most common form of communication with the police was via a landline. Some control rooms had a dedicated line from the control room to Police Control. Others relied solely on telephoning 999 and it sometimes took a considerable amount of time to obtain a response from a police operator since a call from the control room was given the same priority as one from a member of the public. This meant that control room operators were unable to deal with live incidents requiring an immediate response.

When the operators were connected with Police Control, some police operators queried the information provided by the operators, demonstrating a distinct lack of trust in the operator's judgement. The degree of questioning was dependent upon the individual police operator dealing with the call, and upon the control room operator's ability to communicate effectively.

Once the details were passed to police control and the officers were deployed, it was often necessary to keep the officer on the street updated. Crucial time was wasted when this information had to be relayed via the police control operator. One operator stated:

We can watch the police on the screen missing the right person, because we cannot communicate with them at the time...they also release the suspect sometimes...sometimes they can be following them in the car and they go right past the person they are looking for, and we watch this, but by the time we get through to the comms, and this is relayed to the police car, they can be long gone.

The police control landline was more effective when it was utilised alongside a facility that allowed images to be viewed by police control. This is discussed in the next subsection.

Passing images to police

Seven control rooms monitored cameras that could also be viewed by the police in various locations: usually Police Control, but also at the front desk of a police station. This viewing facility took two forms:

- images of interest to the police being patched through by the operators, thus alerting the police to an incident;
- the police having dual control of the cameras so as to have the opportunity to conduct active monitoring whenever necessary – this was utilised in two control rooms.

This facility was combined effectively with the police control landline to enhance the efficiency of police response, as well as reducing the time spent questioning the information provided by the control room operators. The following advantages of such combinations are listed below.

- Police operators could view the incidents that operators were reporting over the landline. This reduced the amount of time the operators spent describing incidents, and also gave the police a clearer indication of the characteristics of an incident.
- Police operators could request an image of a certain area or target to ascertain whether a reported incident was occurring. This was shown to be particularly beneficial in checking probable hoax calls, and was also used to assess the severity of the situation.
- They allowed police operators to view their colleagues attending an incident and to respond rapidly to any problems that might arise.
- They demanded communication between police and the control room operators, which helped build up mutual understanding.

Retail/pub radio systems

As previously mentioned, the retail and pub radio systems directed operators to 14 per cent and 8 per cent of incidents monitored across the eleven control rooms in which these systems were used. Table 7.3 shows the activity of the retail/pub radio systems and the number of incidents and offences reported to the control room.

Table 7.3: Number of incidents and offences reported to the control room by retail/pub radio.

Control room	Number of offences monitored	Retail radio system			Pub radio system		
		Number of offences reported	Number of non-offences reported	Number of offences already knew about	Number of offences	Number of non-offences reported	Number of offences already knew about
Dual estate	21	1	2	15	0	0	5
Eastcap estate	56	4	5	11	0	0	6
Westcap estate*	9	N/A	N/A	N/A	N/A	N/A	N/A
Borough town	27	0	2	1	5	3	9
Deploy estate	92	10	2	40	0	0	3
Northern estate	55	3	2	5	4	1	6
Hawkeye*	2	N/A	N/A	N/A	N/A	N/A	N/A
City outskirts	64	3	2	4	3	1	1
Market/S hire town	1	1	1	5	0	0	0
South city	62	6	9	9	0	0	1
Southcap estate	38	0	0	0	0	0	0
Total	436	28	25	90	12	5	31

*No radio system was installed in these control rooms.

Usually, retail/pub radio users became aware of incidents before the control room operators. This can be explained by the fact that the cameras did not cover the inside of retail units and public houses where most of the offences that concern the retail/pub radio users were committed. Where operators informed retail radio users of 40 offences, retail/pub radio users identified 121 offences (28 per cent of the offences monitored) before them. Thus more intelligence was being passed from the retail/pub radio users to the operators than was being provided by the operators, but the communication between the control room and radio systems was seen as invaluable, as noted by one operator:

...there's no point having anyone here to monitor the cameras if there is no retail radio....the eyes and ears of everything really. If you don't have communication, you wouldn't know what goes on. They are the eyes and ears of what we can't hear and see.

Operators did not pass intelligence about every offence they monitored to retail/pub radio users, as many of them were not in the same geographical area as the radio systems, or did not relate to retail theft or alcohol-related offences.

In the main, operators aided the retail/pub radio users by tracking the offenders and directing security staff once an offence had been committed. The operators relied on the retail/pub radio users to supply good intelligence and react appropriately to intelligence passed to them. Some of the retail/pub radio users did not employ security staff, and shop assistants or bar staff were placed in charge of the radios. The retail/pub radio systems were more effective when security staff or other appropriate people operated the radios.

It is only as good as those (the radio holders) in the store...There is a definite need to inform the users how to operate the system...quick descriptions and direction of travel being the most important information.

Some stores have security personnel and they are generally more efficient at communicating with the operators. However, some of the security personnel can be quite overzealous.

Pub radio can be effective, although this depends on who is controlling the radio. It used to be poor, but it is a lot better because the door staff are more professional. The door staff can prevent assaults by warning potential offenders that the camera is watching them.

Another problem identified with the retail/pub radio systems was the speed with which they contacted the control room. In one situation, the shop contacted the control room almost twelve minutes after the incident had occurred.

The control rooms had a better working relationship with retail radio users than pub radio users, as more intelligence was received and passed between the operators and the former (see Table 7.3). The pub radio users frustrated operators, as they felt that "...the pubs can't hear the radio, as they usually leave it at the bar". When the operators did not receive a response from the radio they contacted the premises via telephone, but this was a slower form of communication than the radios.

Summary

This chapter has explored the type and level of communication utilised by the control rooms under observation. Information was shared with a number of agencies, most notably the police, retailers and pubs/clubs. A number of key issues were raised by the research:

First, the most effective method of communication between the police and the control room was police radio. Two-way radio communication substantially improved the exchange of information, increasing the efficiency with which incidents were dealt with. One-way communication can also be effective. Police can ask control rooms to direct the cameras at a

particular target, or surveillance can be directed through listening to police conversations over the radio.

Second, where there was an effective working relationship between the police and the operators, trust was built and maintained, thus reducing the amount of time lost when incidents occurred. This relationship was aided by the use of appropriately trained operators who were effective in conversing with the police, and could exchange incident details quickly and thoroughly, thus reducing the need to recontact police control to give further details. When the police had access to images within the police control room there was less need to stay on the line with updates of information.

8. Processing and managing evidence

A key feature of all the control rooms observed was the recording of images in order to produce useable footage for use as evidence. Predominantly, recorded footage was taken from the control room by the police and used retrospectively in the detection, apprehension and conviction of offenders. Tape management is crucial for the production of useable evidence and is a key daily activity performed in the control rooms. Crucial to effective tape management procedures was the technology used (analogue/digital), and the procedures by which tapes were archived. This section will discuss the tape management procedures in the control rooms, and how this impacted on their overall operation.

Tape management

Managing the tape changeover period, as well as preparing and analysing images, was a key procedure in the day-to-day running of the control room. Removing used and inserting new videotapes, logging and archiving these changes, degaussing²³ and quality checking the tapes, was a lengthy process and errors could be costly. Although tape management is a key daily duty of the operator, if it is not managed effectively it can interfere with the active monitoring of the cameras. The level of such interference varied widely across the control rooms, and was shown to be extreme in a number of cases; this was dependent on the following factors.

1. **The type of recording method used (analogue or digital):** Of the thirteen control rooms evaluated, ten recorded on analogue systems and three recorded digitally. One of the major advantages of digital recording technology over analogue is a quicker searching capacity. Two of the digital systems utilised a PC-based platform where operators could choose the appropriate camera from a menu and specify a time and date to allow almost instant access to the images they required.
2. **The number of tapes to be changed:** Large camera systems, with analogue recording technology, require a greater number of tape changes, more tapes needed checking and logging, and more time is spent degaussing. This might seem self-evident, but must be borne in mind when bidding for large numbers of cameras.

One of the control rooms under evaluation had a 520-camera system and this resulted in tape management regularly absorbing approximately 35 per cent of the operators' shift. During the 44 hours of observation seven hours (16per cent of the time) was spent managing tapes.

3. **The number of changes per day:** Three of the ten analogue systems followed a procedure whereby they only changed tapes once every 24 hours. Although this reduced the time spent changing tapes in a 24-hour period, it did mean that frames per second and therefore recording quality was reduced in order to fit the footage on the videotape. To complement the singular tape change, some control rooms, during quieter periods (i.e. 3-6am), prepared the tapes in advance and completed the appropriate logging procedures.
4. **The number of operating staff present during the changeover period:** In order to reduce the time that cameras are left unmonitored, the shift changeover period should be lengthened and this should coincide with tape-changing. During the shift changeover the two shifts can be overlapped for a period of time (e.g., 30 minutes), allowing one shift to undertake the tape changing, whilst the other shift monitors the cameras.

²³ This is a procedure whereby the images are completely erased from the videotape.

Managing evidence

Once the used videotapes are removed from the VCR, they are logged with the date, time, VCR number and reference number. This ensures that when the tape is archived for a set period of time, it is easily retrievable. The management of evidence raises two important issues: the length of time evidence is retained, and the number of times videotapes are reused before being discarded.

Retention of evidence

The tapes were archived for a set length of time, during which they could be used by authorised personnel (for example, police, defence solicitors and other local authority personnel). The Fifth Data Protection Principle²⁴ states that “images should not be retained for longer than is necessary and make a recommendation that images should be stored for 31 days”. Across the control rooms, the image retention period ranged from 14 to 56 days. The majority observed the recommended length of 31 days. However, the 14-day retention period in three control rooms (Hawkeye) resulted in police officers requesting images after they had been deleted. This was all the more problematic as the system’s main purpose was to provide evidence to the police, as opposed to active monitoring. It is crucial that police officers are made fully aware of how long images are retained after the incident has occurred, and this period should be the recommended 31 days.

Number of tape reuses

Once the archiving period comes to an end, the videotape was either re-used or discarded. If videotapes are reused, they must first be degaussed. This is an essential procedure because for any footage to hold up as evidence in court it must be recorded onto a blank tape. Of the thirteen control rooms observed, all but one followed strict procedures whereby they reused tapes no more than twelve to thirteen times. This is the standard number of tape reuses to ensure that the videotape is of the highest quality. However, in one (hospital-owned) control room, no formalised procedures and no Code of Practice were in place, and following an audit, the tapes were found to be of extremely poor quality. This is an example where the absence of a standardised procedure can impair the work of a control room.

Summary

This chapter has investigated the process by which control rooms recorded, stored and retrieved images that could be subsequently used as evidence. Procedures of tape management varied across the control rooms, impacting in different ways on their effectiveness. A number of key issues were raised.

First, a number of control rooms followed procedures whereby they prepared tapes in advance of the changeover time during quieter periods (i.e. 3-6a.m.). This avoided operators taking extensive periods away from monitoring to deal with tape management.

Second, where evidence was retained for less than 31 days, this sometimes meant that images were requested after they had already been erased and reused.

Third, it was seen to be very important to maintain a Code of Practice setting out the operating procedures of the control room. This includes the length of time tapes are retained and also the number of times a tape is reused before being discarded.

²⁴ *Does your Closed Circuit Television System meet the Requirements of the CCTV Code of Practice within the Data Protection Act 1998?* CCTV Data Protection Inspectorate (2002).

References

- Aldridge, J. (1994) *CCTV Operational Requirements Manual*. Police Scientific Development Branch, 17/94. London: Home Office.
- Bulos, M. and Sarno, C. (1996) *Codes of Practice and Public Closed Circuit Television Systems*, London: Local Government Information Unit.
- CCTV Data Protection Inspectorate (2002) *Does your Closed Circuit Television System meet the Requirements of the CCTV Code of Practice within the Data Protection Act 1998?*
- Gill, M., Spriggs. (2005) *Assessing the Impact of CCTV*. Home Office Research Study 292, London: Home Office.
- National CCTV Evaluation Team (2003) *National Evaluation of CCTV: Early Findings on Scheme Implementation – Effective Practice Guide*. Home Office Development and Practice Report, 7, London: Home Office.
- Norris, C. and Armstrong, G. (1999) *The Watchers and the Watched: The Social Structuring of Surveillance*. In Norris, C. and Armstrong, G. (eds) *Maximum Surveillance Society*. Berg Publishers.
- Norris, C. and Armstrong, G. (1998) *CCTV and the Social Structuring of Surveillance*. In Norris, C. Moran, J. and Armstrong, G. (eds) *Surveillance, Closed Circuit Television, and Social Control*. Aldershot: Ashgate.
- Smith, P., Spriggs, A., Argomaniz, J., Allen, J., Jessiman, P., Kara, D., Little, R., Swain, D., Follett, M. and Gill, M. (2003) *Lessons in Implementing CCTV Schemes: An Early Review*, in Gill, M. *CCTV*, Leicester: Perpetuity Press.
- Tyerman, G. (2002) *Seen But Not Heard*, *CCTV Today*, March/April. www.cctvmags.com

Appendix A: Incident template

a) What was the target? _____
b) What caused the operator to watch the target? _____ _____
c) At what time did the surveillance start? _____
d) How long did the operator watch the target for? _____
e) Which camera number/s did the operator use? _____
f) Did they contact another agency about this target? No <input type="checkbox"/> Police <input type="checkbox"/> Other _____
g) If the operator contacted the police, did they take action? Yes <input type="checkbox"/> No <input type="checkbox"/> DK <input type="checkbox"/> What Action? _____
h) Was this incident logged? Yes <input type="checkbox"/> No <input type="checkbox"/>
i) Incident spotted whilst operator was: Active monitoring <input type="checkbox"/> Passive monitoring <input type="checkbox"/>
j) Incident spotted whilst operator was performing: Tasked monitoring <input type="checkbox"/> Untasked monitoring <input type="checkbox"/>

Appendix B: Logging incidents methodology

Each time an operator watches a specific target *for a minute or more*, an incident form is completed. If the operator deliberately stops watching the target and then starts again later, the second time is treated as a new incident. If the operator accidentally loses sight of the target and then picks it up again later, this is treated as a single event.

Notes on the questionnaire (These are guidelines and you may need to include other information, if appropriate).

Section A – What was the target?

Specify:

- Age: child, teenager, twenties, thirties, middle aged, elderly, DK.
- Gender: male, female, DK.
- Ethnicity: if possible, obtain code.
- Appearance: smart/formal, casual indistinct, scruffy, any other details that can be obtained by the fieldworker e.g. wearing a tracksuit or a nice flowery dress.
- If group: how many people, and state the characteristics of the primary target if they are obvious, if not, then the general characteristics of the group from the above.
- Vehicle: type of vehicle, stationary/moving, occupied/unoccupied.
- Buildings: purpose of the building, and position of the building.

Section B – What caused the operator to watch the target?

Two types of information needed for this section:

1. **Who initiated targeting:**
System operator, Police Control, police on the street, private security patrol, store detective, Retail/pub radio, member of the public, other (specify).
2. **Reason for targeting:**
 - *Person/group targeted – criminal activity:* Theft from store, theft from person, theft from motor vehicle, vandalism/criminal damage, other property crime, violent theft from person, assault/fight, other violent crime, unruly/disorderly/nuisance behaviour, traffic violation/problem, drugs, known offender to operator, police have identified as a known offender, or no obvious reason.
 - *Person/group targeted – suspicious behaviour:* Loitering in street, running, and looking at the cameras.
 - *Appearance:* Monitored due to personnel characteristics such as dress, race, or membership of a subculture group.
 - *Location:* Monitoring due to the person's location, e.g. a person walking through a car park with a high crime rate. The presence of an individual, or group, in the middle of the night.
 - *Protection:* Person in need of help, or suspected missing person
 - *Vehicle targeted:* Number plate recognised, being driven inappropriately, parked with individuals inside, parked in a strange place, or no obvious reason.
 - *Building:* Lights on late at night, checking for damage/graffiti, specific task to monitor buildings, or no obvious reason.
 - *Objects:* Suspicious looking package, litter, or no obvious reason.
 - *Voyeuristic:* monitoring purely on prurient interest.
 - *Lack of available targets for surveillance:* Operators may target any person/vehicle they detect whilst monitoring, e.g. may occur when there are low levels of activity in the target area, e.g. late at night.

Section C and D – Time when the surveillance commenced, and the length of time this surveillance was maintained.

Section E – Which camera number/s did the operator use?

Note the camera initially used to monitor the incident; if it is not possible to identify the camera (either number or street), note the approximate location. If monitoring involves the tracking of the target, note all the cameras used in the surveillance, and the order in which they were used.

Section F - Did you contact another agency about this target?

Specify:

- Private security
- Shop security
- Pub/club security
- Control room management
- Police
- Fire brigade
- Ambulance service
- Local council department e.g. environmental
- None
- Other CCTV operators

Section G – If the operator contacted the police, did they take action? What action?

Specify:

Target spoken to.

- Target physically restrained.
- Target let go.
- Target taken away by police.
- Target arrested.
- Not obvious reason.

Section I

- i) Active monitoring refers to when the operator is not following any pre-programmed camera patterns and is monitoring interactively/proactively, i.e. he/she is controlling which camera he/she is monitoring.
- ii) Passive monitoring refers to when operators are watching pre-programmed camera selections, they are not interfacing with the control panel, i.e. they do not control which camera they are monitoring.

Section J

- i) Tasked monitoring is when the operator has been directed by an outside source to monitor a specific camera, or monitor a specific area. This may be under instruction from the control room manager, police or other external agencies. The tasked monitoring may be something they have to do every shift, i.e. they must watch the high street for ten minutes every hour. The tasked monitoring can be a one off task, i.e. due to a special police operation on a shift, or a phone call from a police officer.
- ii) Untasked monitoring is when the operator spots an incident independently, whilst performing monitoring duties.

Appendix C: Incoming calls template

Please tick/mark the initial box each time the operator was contacted, and the subsequent box to highlight what action followed. *(Table to be adapted for each scheme)*

	Operator contacted by (Mark as appropriate)	Took monitoring action 1) Found target 2) Did not find target 3) Camera not in range 4) Had already found	Recorded incident	Passed on information to the police	Police took action 1) Yes 2) No 3) Don't know	Recorded police taking action	Logged as incident
Help point							
Retail radio							
Pub radio							
Public							
Transport department							
Police control Room							
Police officers							
Police CCTV control room							
Special operations radio/phone							

Appendix D: Semi-structured questionnaire

Aim: To determine the working practices of the control room from the operator's viewpoint.

Objectives

- a) To examine operational behaviour.
- b) To examine operator attitudes to CCTV.
- c) To examine the criteria used for surveillance by operators.
- d) To examine action taken by operators where incidents occur.
- e) To examine working relationships with external agencies, such as the police.
- f) To examine operators impressions of their job.

Methods

Interviews to be conducted with operators that work in the control room (interviews to be conducted whilst operators are on shift). Each operator is responsible for questioning one operator per shift.

The questions are to be used as a guide for conducting the interview, and should be expanded on where appropriate.

One researcher will be in place in each control room to do the interviews, unless there are safety reasons as to why another field worker is required to be present.

Generic details to collect

- Location of control room.
- Type of area(s) in which cameras are positioned.
- Number of cameras.
- Number of monitors per operator.
- Operator interviewed.

Question guide

To examine operational behaviour

Explore how the control room operators work (working patterns, training, and experience).

1. What tasks do you carry out whilst on shift? (Explore whether they do other things apart from monitor screens.)
2. How long do you feel you can monitor screens effectively before you need a break away from them? (*Explore what breaks they take, how often, what they are expected to take, and what do they do on their breaks.*)
3. How do you feel about the new/planned equipment? (*Explore how easy they find it to use, do they prefer this or the old system, what are the benefits and disadvantages of each system. Observation of how they interact with the new equipment; how easy they find it to move around the system.*)

Training/experience/etc

4. Have you had any training to do your job? (*State what, when, is it on-going?*) If yes, how useful was this? What would make it better?
5. Have you worked with CCTV before? (*Explore when, how long for, was it a similar type of scheme, and has it been easy to adapt to this new scheme?*)
6. Do you refer to the code of practice?

Operator attitudes to CCTV:

Examine operator attitudes to their job.

1. What do you think the purpose of CCTV in (name of area) is? (*General question for everyone to ask*)
2. Do you think it achieves its purpose? Why is this?

To examine the criteria used for surveillance by operators:

When operators view screens what are they looking for?

What determines what they are looking for, e.g. have they been primed to look for particular events, do they have predetermined criteria, or is it 'gut feeling'?

1. What attracts your attention when monitoring screens? (*Explore what attracts their attention when they are monitoring the screen, i.e. what catches their eye to start monitoring someone*)
2. Explore what criteria for surveillance they have, i.e. people with particular types of clothes, behaving in a certain way. Or have they been given particular guidelines from external agencies, i.e. police to monitor certain types of people that month?
3. Do you have any specific criteria for surveillance?
4. If yes, where do these criteria come from? (i.e. training (state what), protocols (state what) word of mouth, 'gut feeling', knowledge in the business etc.)
5. How would you define an 'incident'?
6. Is there a routine procedure in how the cameras are watched, i.e. the order in which certain streets/areas are observed? (*Explore why this is the case, if it is.*) Do you monitor the cameras in a routine way? (*Explore why this is the case, if it is.*)

7. Do you focus your surveillance on different areas depending upon what time of day it is, i.e. between day and night? (i.e. focus on certain cameras more at a particular time of day.) *(Explore why this is the case, if it is.)*
8. Depending on the time of day are different behaviours viewed as suspicious?
9. Does the time of day, affect how certain behaviours are monitored/ observed/ reacted to?
10. Do you ever have to prioritise incidents?
10. If yes, what method do you use to prioritise incidents? *(Explore, what type of incidents are prioritised, not prioritised.)*
12. Apart from criminal incidents, is there anything else you use the cameras to monitor?

To examine action taken by operators where incidents occur:

Explore what happens when an incident occurs: who is contacted, and what are the procedures?

What action do you take when an incident 'occurs'?

1. Are there any procedures? *(State what, and what do they think of these procedures)*
2. When are you likely to pass information on to the police?
3. What is the response time from an incident being viewed and action being taken by you?
4. Do you usually get an immediate response from the police when you pass information on? Have there ever been in situations where you have requested the police to attend an incident and they have not done so, or there has been a significant delay? *(Explore what happened as a result.)*
5. What happens once an incident is reported to the police? *(Need to explore whether they know what happens to an incident once it is passed on, i.e. outcome.)*
6. Is there anyone else you pass information on to? *(If yes, to who and why is this?)*
7. To your knowledge, has any footage ever been used in court as evidence? *(Find out what/when/why.)*
8. If screens can be operated by outside agencies, how often does this happen? And has it ever disrupted your monitoring?

To examine working relationships with external agencies:

Explore operator attitudes and co-operation with external groups: how the operators view their working relationship, and how they think they work together.

Police

1. What contact do you have with the police? *(i.e. is there a radio link? Do they come into the control room?)*
2. Do you receive requests by the police to monitor incidents? What happens when you receive such requests?
3. Do police officers enter the control room? How often? Why do they come in?

Other external agencies

4. What other external agencies do you work with/come into contact with? What is the nature of this relationship/contact?
5. How useful, if at all, do you think schemes such as retail/pub radio etc. are in aiding you to do your job? *(Explore working relationship with those on the other end of those schemes, and any problems.)*
6. How do you view your working relationship with these external agencies?
7. How do you think your role is viewed by other external agencies, i.e. retail/pub radio? *(Need to explore whether they feel that they are respected/valued/taken seriously/listened to by external groups. If not, why? If yes, how?)*

To examine operator impressions of their job:

1. What is considered to be a 'good' day in your job? Why is this?
2. What would be a 'bad' day in your job? Why is this?
3. Is there anything that would improve your job/working conditions? If so, what?

Appendix E: Observational guide

Aim:

To observe the working practices of operator and control rooms.

Objectives:

- a) to observe operational behaviour;
- b) to observe operator attitudes;
- c) to observe the criteria used for surveillance by operators;
- d) to observe action taken by operators where incidents occur;
- e) to observe working relationships with external agencies such as the police.

Methods:

The '*Relevant prompts for observation*' are to be used as a guide for your observation. Obviously, in some shifts it may not be possible to observe certain things where it did not occur (i.e. contact with the police, or external agencies etc.)

One researcher will be in place in each control room to do the observation – unless there are safety reasons as to why another fieldworker is required to be present.

Generic details to collect:

- location of scheme;
- date/ shift time;
- number of operators on shift (initials of operators);
- hours spent on shift by the operator.

1. To observe operational behaviour:

- Explore how the control room operators work.

Relevant prompts for observation:

1. The ease with which the operators use the equipment. Is it new or old?
2. Are they following any protocols that you are aware of when carrying out operational duties – codes of practice etc. (*You will need to find out what protocols exist, and be familiar with them. You could perhaps identify key areas in the protocol documents that you want observe.*)

2. To observe operator attitudes:

- Examine operator attitudes to their work.

Relevant prompts for observation

1. How do the operators appear to work? Are they efficient/focused/are they doing other things not related to their work etc?
2. Are they taking their breaks? How long are these?

3. To examine the criteria used for surveillance by operators:

- When operators view screens, what are they looking for?
- What determines what they are looking for, e.g. have they been primed to look for particular events, do they have predetermined criteria, or is it 'gut feeling'?

Relevant prompts for observation

1. What attracts their attention when monitoring screens?
2. Do they appear to have any specific criteria for surveillance?
3. Is there a routine procedure in how the cameras are watched, i.e. the order in which certain streets/areas are observed?
4. Is there a difference in their surveillance of cameras depending upon what time of day it is, i.e. between day and night? (i.e. focus on certain cameras more at a particular time of day/ certain area of the town).
5. Do operators view the scheme cameras in the same way as the non-scheme cameras?
6. Do monitoring procedures change according to the time of day?
7. What happens when a call comes from the police asking operators to monitor something in particular?
8. Do they ever have to prioritise incidents? If yes, what method do they use to prioritise incidents?
9. Apart from criminal incidents is there anything else they use the cameras to monitor?

4. To examine action taken by operators where incidents occur:

- Explore what happens when an incident occurs, who is contacted, what are the procedures?

Relevant prompts for observation

1. What action do they take when an incident 'occurs'?
2. Is there any evidence that they are following procedures? What are the procedures? Are these followed?
3. When are they likely to pass information on to the police?
4. What is the response time from an incident first being viewed and action being taken by the operator?
5. Do they usually get an immediate response from the police when they pass information on?

6. What happens next? (*Need to observe what happens once an incident is passed on, i.e. the police response, do the operators continue to monitor and if so why? Need to separate out different responses*).
7. Do they pass on information to anyone else? (If yes, why, who, and what happens?)
8. What happens when operators receive instructions externally to monitor incidents? (*Observe who they are likely to get calls from to monitor incidents, i.e. retail radio/pub radio/ police, and what happens. You will need to separate out actions of operators from actions of external parties, i.e. the response of the police, the response of the operators, and the response from those operating the retail radio schemes.*)
9. Are operators logging incidents?

5. To examine working relationships with external agencies, such as the police:

- Explore operator attitudes and co-operation with external groups, how the operators view their relationship and how they think they work together.

Relevant prompts for observation

1. Are there procedures/guidelines/protocols in place for non-staff who enter the control room area? If so, what are these and are they being followed? (*Again, will need to familiar with any guidelines etc.*)
2. How are the procedures/guidelines/protocols being interpreted and followed, i.e. what do operators do in order to follow procedures and why?
3. What contact do the operators have with the police? (i.e. is there a police radio link? Do they come into the control room?)
4. Do police officers enter the control room? (How often? Why do they come in?)
5. How do operators view their working relationship with the police? Are there any other external agencies that the operators work with/come into contact with? What is the nature of this relationship/contact? How do they view this working relationship?

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