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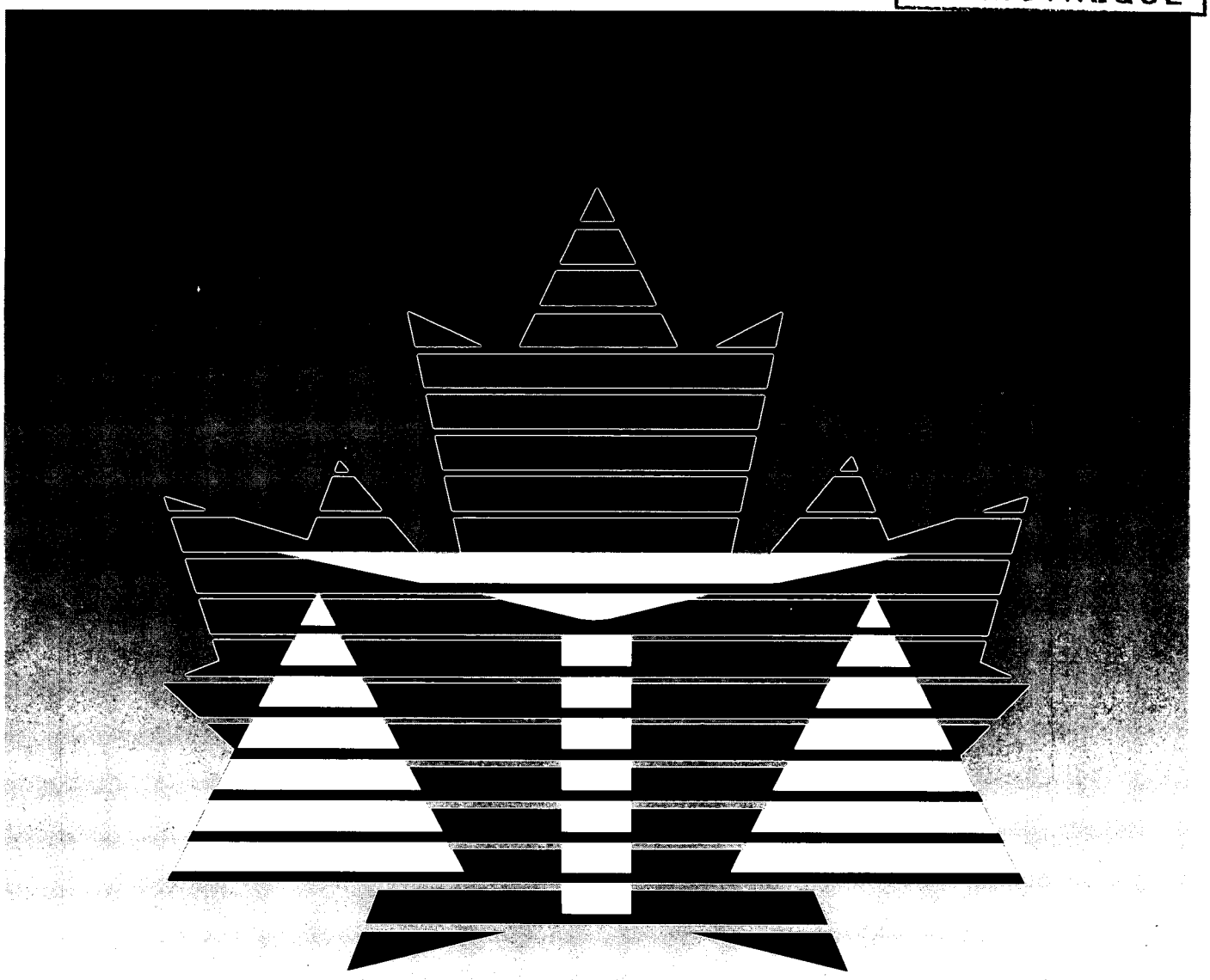
A Guide for the Diagnostic Evaluation of Police Record-Keeping Systems

Canadian Centre for Justice Statistics



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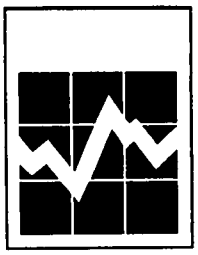

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A GUIDE FOR THE DIAGNOSTIC EVALUATION OF POLICE RECORD-KEEPING SYSTEMS

PART 1 - INTRODUCTION

Purpose

The purpose of this Guide is to help police departments evaluate their own record-keeping systems. This evaluation involves an examination of the record-keeping system from the receipt of a call for service to the point at which a data submission is sent to the Canadian Centre for Justice Statistics (CCJS). Monitoring the quality of the record-keeping system is important because the record-keeping system is used to:

- document that the information system is functioning correctly
- monitor the workload and effectiveness of the police
- provide good local police statistics
- provide data for the Uniform Crime Reporting (UCR) Survey
- ensure the accuracy of databases that depend on local police information; i.e., the National Repository for Fingerprints and Criminal Records.

More specifically, the methodology evaluates the coverage and quality of police data pertaining to cases involving Criminal Code and other federal statute offences. The evaluation of data for cases involving municipal, traffic, and provincial offences are outside the scope of this guide.

Background

The guide evolved from an earlier project conducted in 1989, whereby, data quality assessment procedures were developed to evaluate police record-keeping systems generally. These procedures were pilot-tested in the Calgary and Edmonton Police Services. The primary objective of the 1989 project - to make the procedures available to the Canadian police community - is realized with the production of this guide.

The guide is directed at departments which receive most of their calls for service by telephone and utilize computers extensively; however, the extent to which computers

are used may vary to some degree. Departments which do not fit this profile may still be able to apply some parts of the methodology or adapt it to their situation. A complete application of the methodology should be possible where: 1) telephone calls are recorded on tape; 2) complaint histories are taken; 3) occurrence/incident reports are created; and, 4) a monthly data submission is sent to the CCJS.

Methodology

The assessment procedures involve following a traceable flow of information. Once a telephone call is recorded on tape, it is possible to examine the flow of information up to the point at which a UCR data submission is sent to the CCJS.

The basic structure of the assessment follows the logic of the record-keeping system itself. The assessment consists of three components: 1) the telephone component, 2) the communications component, and 3) the records component. The most common source of error in police record-keeping systems is the loss of cases at the interfaces between these components.

The methodology employs sampling techniques extensively. For example, in selecting listening times for the telephone component, it is necessary to ensure that a representative set of days of the week and hours of the day are selected. Note that the results should be treated as indicators of coverage and data quality rather than precise statistical estimates, due to the use of small sample sizes and the lack of true randomization. Results should, however, be sufficiently accurate for police evaluation purposes.

Resources

It is difficult to provide precise estimates of the amount of time required to implement this system. In addition to the time needed to complete each component, it is necessary to set aside a few days to become familiar with the methodology.

One very rough estimate of the resources needed to complete all components is approximately one person-month. Ideally, the work should be performed by a team; one team member should have Records experience, and as many members as possible should have experience with the Communications Centre, given the requirement to operate telephone equipment. The amount of time needed, estimated more precisely in the different sections of this document, varies by component. The telephone component is particularly resource-intensive. Note that it is possible to omit this component and independently examine the second and third components. However, if this course is followed, an important source of error will be missed.

It is recommended that the assessment not be done on an interrupted (spare time) basis, although each component can be done separately.

Organization of the Guide

The evaluation procedures for each of the telephone, communications, and records components are contained in the Methodology section to follow. Procedures are summarized for each component, then followed by a more detailed step-by-step guide.

Instructions for drawing samples are provided for each component. Appendix A provides the necessary blank data sheets, along with examples of their use. Appendix B contains sampling tables for choosing the listening periods for the telephone component.

PART 2 - METHODOLOGY

2.1 TELEPHONE COMPONENT

The telephone component is fundamental to the overall evaluation: if calls are misunderstood, ignored, or not answered, the remainder of the information system is short-circuited. Unlike other aspects of the record-keeping system, this component does not capture walk-in reports or on-view incidents. The scope is limited to calls received on 911 and other lines.

This phase involves drawing a sample of calls, recording their characteristics, listening to the calls, and finally, tracking their history (i.e., complaint history or occurrence report) (see Chart 1). One source of error is the loss of incidents between the telephone call and the entry of a complaint history created by Communications and stored on the Communications computer system. The other source of error is the misclassification of incidents in complaint histories. It will be possible to compute the error rate for this entry level by following the procedures given in this section.

Resources

The resource requirement for the telephone component is determined by the amount of time which must be spent listening to recorded calls. It can require up to 85 hours to complete this task: a small force could need the full 85 hours while a large force might need only 8 hours. However, if a large force has many tracks of tape and a telephone line in addition to a 911 line, 32 hours of listening time may be required. Note that locating the individual time segments could inflate the resource estimate by up to 10%. In addition, the team should set aside some time to review the methodology and examine the results (approximately one day).

The total amount of time estimated for the telephone component ranges from 6 to 15 person-days; the procedures will be most resource-intensive for those forces with the *lowest* annual number of offences.

Summary of Procedures

- Select a sample of days from one month and, within these days, select a sample of time periods from the telephone tapes. The sample will vary in size from approximately 50 to 175 calls, depending on the volume of calls to your force.

- Listen to the selected time segments and identify all the conversations starting in these time segments that may refer to a federal offence (municipal by-law, traffic, and provincial statute offences are excluded).

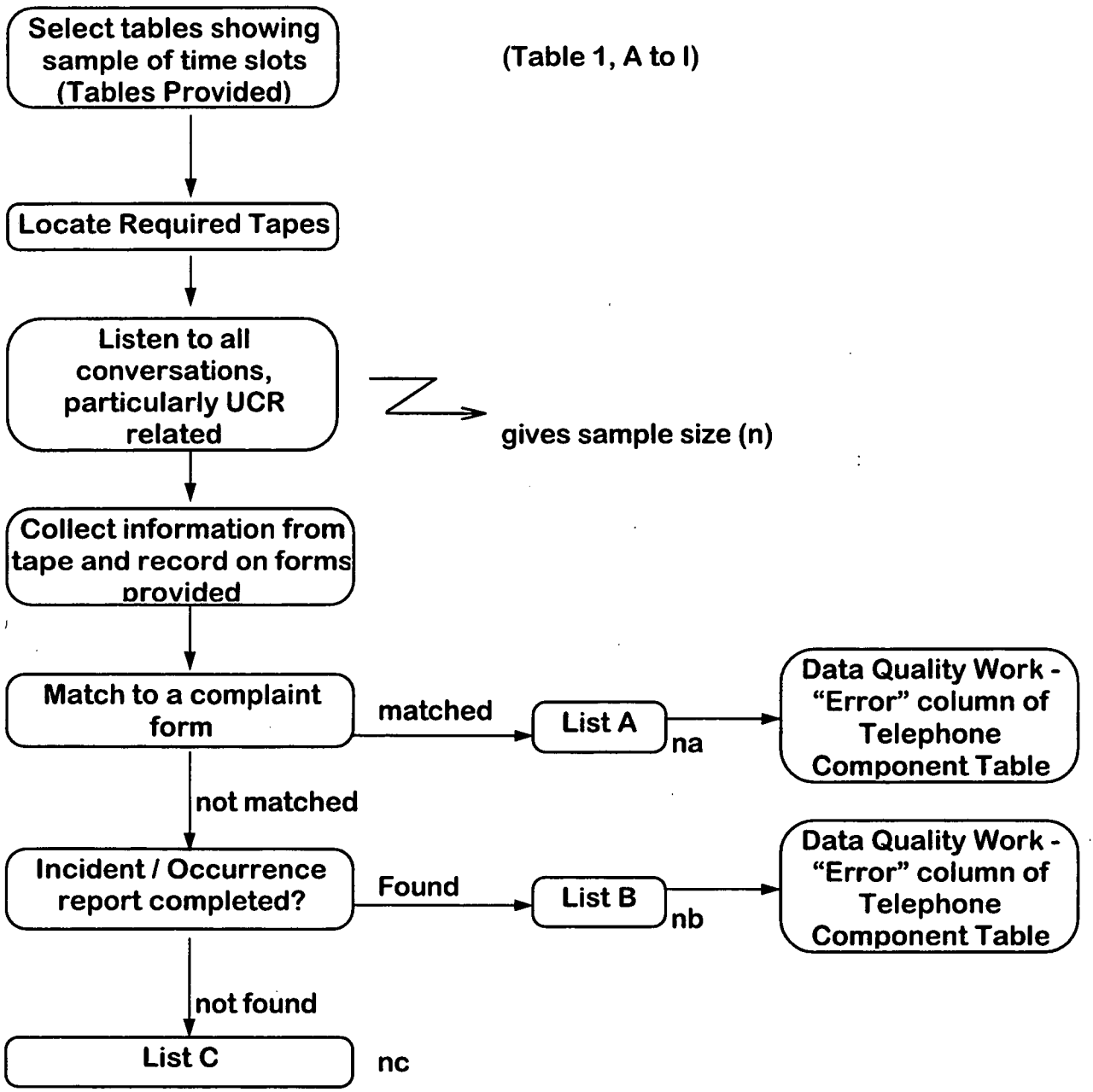
- Collect the following information from each identified offence in the selected time periods of the tape:

  a. date and time of the call
  b. conversation number
  c. complainant's name
  d. complainant's address
  e. location of the incident
  f. type of incident as stated by the complainant or by the operator
  g. operator-stated police response

- Based on information in the previous bullet, try to trace these calls to the Communications System and record whether there is a computer entry or a report was submitted. Record all incidents and specify if the call could not be traced. If the call cannot be found in the Communications System, try to trace it in Records. Appendix A contains a table (Telephone Component Table) for recording the information necessary to match telephone calls to complaint histories.

- Summarize the findings and calculate the error rate.

Chart 1. Summary of Telephone Component



$$\text{Error rate} = \frac{nc}{na+nb+nc} = \frac{nc}{n}$$ for the sample selected

This provides the percent of UCR related calls that have no subsequent complaint history or incident / occurrence report filled out.

Detailed Procedures

1. Choose a month to study. If telephone tapes for the necessary days of the month are available, a recent month may be used. Otherwise, plan to freeze tapes for these days in a future month. Try to avoid days which are unusual in police activity, such as those involving a riot.

2. The days of the month to be studied are as follows: the 3rd, the 7th, the 11th, the 15th, the 19th, the 23rd, and the 27th. These seven days include all the days of the week.

3. The 15 minute time slots on each day of the month vary by department. First, establish the total number of Criminal Code incidents reported in the most recent year. Look up your force in Table 1 (next page) which lists a sample table for each level of force activity, measured by the annual volume of Criminal Code incidents. Find the range corresponding to your force and the corresponding Sample Table (it is identified by a capital letter and can be found in Appendix B). The ranges include all forces with a Criminal Code total over 5,700 incidents annually. Other forces with fewer incidents are not encouraged to undertake the telephone component, as the resources required may be excessive.

4. Refer to the appropriate Sample Table in Appendix B. The columns consist of the seven days of the month specified in Step 2 above (the 3rd, the 7th, the 11th...), while the rows consist of fifteen minute time periods beginning at midnight (2400/0014) and continuing over a 24-hour period (i.e., until the 15 minute period, 2345/2359). It is only necessary to listen to the time slots marked by an "X"

Example:

In 1994, Victoria had 17,688 criminal incidents. This force falls in the range 17,999 to 16,000 in Table 1, and therefore, corresponds to Sample Table "G", which can be found in Appendix B. Beginning with midnight (24:00) on the first day (the third), one reads down to the first X", the fifteen minute period, 00:30/00:44, and listens to it. The next "X" is at 1:30/1:44 and so forth down to the last "X" on this day, 23:30/23:44 which can be found near the bottom of the second page (Page B). This process is repeated for each of the seven days.

TABLE 1 - SAMPLE TABLES BY FORCE ACTIVITY LEVEL (Criminal Code Total)

Example Force (1994)	Criminal Code Total	Sample Table (Appendix B)
Toronto	221,033	A
Montreal	182,842	B
Vancouver	97,050	C
Winnipeg	76,000----58,500	D
Peel Regional	58,499----39,000	E
London	38,999----33,000	F
Regina	32,999----21,000	G
Laval	20,999----18,000	H
Victoria	17,999----16,000	G
Kelowna (RCMP)	15,999----12,000	H
Longueuil	11,999----10,000	I
Lethbridge	9,999-----7,900	H
Prince Albert	7,899-----5,700	I

Each force is allocated to a Sample Table on the basis of its annual Criminal Code incident volume. However, it will be noted that several ranges with different volumes share the same Sample Table. As well, Sample Table H appears with ranges of incident volumes that are both larger and smaller than Sample Table I. This is because there are really two criteria at work in Table 1: a. maximizing sample size, accomplished by increasing the amount of time spent listening to calls, and b. minimizing resource expenditures, accomplished by decreasing the amount of time spent listening to calls. The specific function of each Sample Table is to allocate time in a way that optimizes these two criteria. This produces the repetitive, alternating pattern shown in the "Sample Table" column of Table 1.

5. Listen to all calls (except traffic, municipal, and provincial) which begin during the 15-minute time periods marked with an "X" in your Sample Table.

a. Each tape track which contains incoming telephone calls must be monitored during each selected time period. If there are few tracks (5 or less), all may be monitored simultaneously, since there is much blank tape time. To monitor more than 5 tracks, personnel may have to monitor one-half the tracks for the required 15 minutes, rewind the tape, and monitor the remaining tracks for the same period.

b. Make a request for telephone tapes and complaint histories to the appropriate internal personnel for the seven sample days (the third of the month, the seventh, etc.).

When printing out the complaint histories, the chronological order of the calls should be kept on each printout to ease the search for specific calls.

c. Record each call on the form provided (Telephone Component Table in Appendix A), noting information as required (e.g., date, time, complainant name, etc.).

6. Follow-up on each call.

a. Attempt to match each call to a complaint history, to determine if a complaint history exists or if a report was made.

Example:

-Telephone tape identifiers: 2/23 (date), 00:45 (time), robbery (offence), 23 South Main Street (complainant's or incident address)

-Complaint history identifiers: 2/23 (date), 00:50 (time), robbery (offence), 23 South Main Street (complainant's or incident address), complaint (history) number 96--00614.

b. Record all findings on the (same) form provided (Telephone Component Table in Appendix A).

c. If it is not possible to trace a call to a complaint history, trace it to an incident/occurrence report in the Records section, if possible. Record all findings.

7. Compute the error rate, based on the actual sample size. Count all errors of omission (i.e., all calls for which there was no complaint history and no incident/occurrence report).

Example:

-number of omission errors = 10
-actual sample size = 173

-error rate = (10/173) X 100 = 5.8%

8. Estimate the number of errors in the entire month based on the sample results. The projected number of omission errors among all calls for the entire month is the number of omission errors in the sample multiplied by the total number of 15 minute time periods in a month, divided by the number of time periods listened to in the Sample Table you used (i.e., marked with an "X"). The number of listening time periods varies from one Sample Table to another. However, the total number of time periods (of 15 minutes each) for all months is approximated by the same number, 2688. (2688 = 28 days X 24 hours X 4 quarter hours).

Example:

-errors in sample=10.
-total number of possible date/time periods = 2688 (28 days x 24 hours X 4 quarter/hours).
-time periods listened to (from Sample Table G) = 167.

Estimated number of errors in month =
errors X # time periods per month / time periods listened to
= 10 X 2688 / 167 = 161

Sample Telephone Results

Table 2 shows the results for an evaluation of the telephone component for a hypothetical police department.

TABLE 2 - UNRECORDED TELEPHONE CALLS
(NO COMPLAINT HISTORY FOUND OR OCCURRENCE REPORT NUMBER GIVEN)

Theft	4
Damage to Vehicle	2
Assault	1
TOTAL	7

Error Rate = # of Omission Errors / Sample Size X 100
= 7/71x100 = **9.9%.**

The error rate for the telephone component of this department was 9.9 %. The error rate appears to be somewhat high (possibly because the department does not have a policy of full reporting of violations). Almost 10% of incidents are missing from the printout of complaint histories, and follow-up to Records.

2. 2 COMMUNICATIONS COMPONENT

In the Communications component, procedures are provided which will guide a police department in evaluating the loss and quality of complaint data. There are two phases: Phase 1 consists of the analysis of a sample of all offences, while Phase 2 consists of the examination of offences which are of particular interest to a department.

Resources

It is estimated that 8 or 9 person-days will be required to execute the evaluation of the Communications component. This does not depend upon the size of the population policed. Additional time should be budgeted to review the methodology and analyze the results. A total of 10.5 person-days should be adequate to complete this component.

Summary of Procedures

Phase 1: Overall Sample

The purpose of Phase 1 is assess the type of information that is transmitted to Records about complaints. It is also intended to assess whether the information is captured in a consistent manner for all offences. Note that a two-page data sheet (Communications Component Table) is provided in Appendix A.

- Select a sample - the overall sample - of 280 cases involving complaints. This will ensure a final sample of 250 and will produce reliable results.

- Obtain a print copy of the call history of all these complaints from the Communications computer system.

- Read the complaint histories and identify whether or not they are potential criminal offences, excluding municipal, provincial, and traffic offences.

- Collect the information below. This information will be used only to trace the complaint files to Records and for analysis purposes (see next step).

    - date of the incident
    - date and time of the call or of the dispatch
    - complaint number
    - complainant's name
    - complainant's address

- location of the incident
- type of incident and assigned communication components code
- communication components disposition code

- Try to trace these complaints at the Records level and record the following information:

  - Was an incident/occurrence report submitted?
  - Is the type of incident reported by Communications consistent with the type of incident reported by Records?

- Summarize the findings, calculate the percentage of errors (incidents for which there is no incident/occurrence report), and note misclassifications.

Phase 2: Samples for Specific Offences

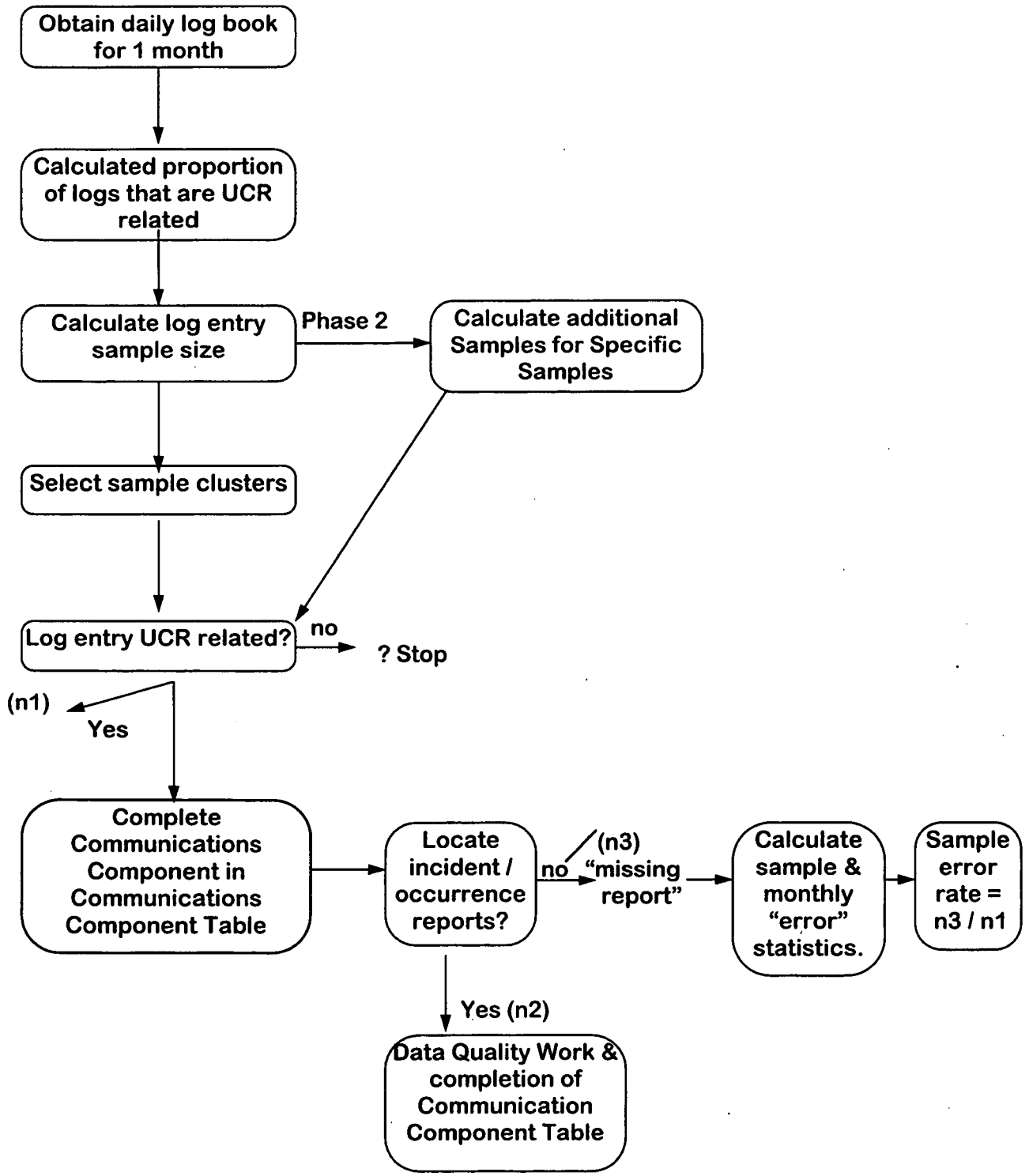
The purpose of this phase is to assess more precisely the type of information that is transmitted to Records for specific offences, and whether this information is captured in a consistent manner. These offences may be those of interest to the department due to their high volume.

- Select a sample of complaints for some specific dispatch codes.

- The remaining steps are similar to those summarized for Phase 1.

Chart 2, on the next page, summarizes both Phase 1 and Phase 2 of the Communications component.

Chart 2. Summary of Communications Component



Detailed Procedures

First, the concept of a systematic cluster sample should be familiar to the team. A systematic sample is based on a list, such as a list of all the entries in the daily activity log. A start is chosen, and then, for example, every fifth or eighth entry is chosen. Instead of choosing just one entry each time, it is possible to choose a group or "cluster". For example, you might choose the fifth, the sixth, and the seventh entry as a single cluster of size three.

Phase 1: Overall Sample

1. Calculate the average number of incidents per complaint history. This is done by dividing the number of offences by the number of entries on the daily activity log of the Communications system for the month selected.

Example:

UCR offences = 6280
Daily activity statistics = 37212
6280/37212 = .1688

2. Divide the target sample size(s) by the ratio from Step 1.

Example:

Target UCR Sample Size = 280
Ratio = .1688
Log Sample Size Required = 280 / .1688 = 1659
Recommendation: Select a Log sample of 1700 entries.

3. Select a Log sample size divisible by the cluster or group size of 50. On the basis of the above example, select a Log sample size of 1700.

4. Select clusters of 50 Log entries (i.e., 34 clusters in this example, as 1700/50 = 34). Note that a "cluster" is a group of adjacent units in the target population. It might be all the houses on one block in a community being studied or it might be all the Log entries numbered between 51 and 100.

a. To select these clusters of 50 entries each, it is first necessary to compute the skip interval or interval between groups by dividing the daily activity statistics by the number of clusters. Note: the "skip interval" is a number that identifies the beginning of each cluster (once the first complaint history is chosen).

Example:

Daily Activity Statistics = 37,712
Sample size = 1700
Cluster Size = 50
Number Clusters = 1700/50 = 34
Skip Interval = 37,712/34 = 1,094

b. Select a number less than or equal to the skip interval (e.g., less than or equal to 1094). Do not deliberately choose or avoid choosing a number which corresponds to a particular complaint history. The number chosen is the first member of the first cluster. It could be, for example, 999.

c. Select the first member of each cluster. For the first cluster, it is the number chosen from (b.) (e.g., 999). Each successive first member is arrived at by adding the skip interval to the first member of the previous cluster.

Example:

The first cluster begins with 999; the skip interval is 1094. The first member of each cluster forms the series:

first cluster	999
second cluster	*2093 =999 + 1094*
third cluster	*3187 =2093 + 1094*
fourth cluster	*4281 =3187 + 1094*
fifth cluster	*5375 =4281 + 1094*
etc.	...

d. Select the other members of the clusters.

Example:

first cluster	999, 1000, 1001..... 1048
second cluster	*2093, 2094, 2095....2142*
third cluster	*3187, 3188, 3189....3236*
fourth cluster	*4281, 4282, 4283... 4330*
fifth cluster	*5375, 5376, 5377....5424*
etc.	...
thirty-fourth cluster	37101, 37102, 37103....37150

Each cluster consists of 50 sequential numbered observations. For example, the first cluster consists of the 50 numbered observations from 999 to 1048.

Note: Unlike this example, your complaint history numbering system will probably not begin at zero at the beginning of the month. It will be necessary to add the value at the beginning of the month to all the values in the examples in "d" above.

Example:

Value at beginning of month = 6000
First Cluster *6999, 7000, 7001...7048*
etc. ...
Thirty-fourth Cluster *43101, 43102, 43103...43150*

5. Scan all complaint histories (Log entries) in the sample, noting those which are within scope (i.e., Criminal Code or other federal statute offences). For the latter, enter on the data sheet (Communications Component Table in Appendix A) complainant name, time and date, location, etc.

6. Trace complaint histories to Records. Note discrepancies and lack of corresponding incident/occurrence reports.

7. Calculate the rate of missing reports. To calculate the percentage of missing reports, multiply 100 by the number of errors, then divide by the number of offences in your sample.

Example:

Errors = 21
# UCR Offences in Sample = 258
Error rate = 21/258 X 100 = 8.1%

8. Estimate the overall number of missing reports in a month. Multiply the number of missing reports in the sample by the monthly crime count (less municipal, traffic and provincial offences) divided by the number of offences in your sample.

Example:

Errors (sample) = 21
Monthly UCR count = 6280
UCR Offences in Sample = 258
Estimated Errors = 21 x (6280/258) = 511

Phase 2: Samples for Specific Offences

This Phase is optional. It may be useful, if for example, your department suspects problems with a particular violation. For example, robbery may be reported by the complainant when investigation reveals a theft. This Phase may identify problems with specific offences, provided that they occur frequently enough to permit analysis.

1. The target offences for Phase 2 include:

   - assault level 1
   - robbery
   - break and enter
   - theft motor vehicles (all categories)
   - theft from motor vehicle
   - frauds (credit cards)
   - other offences of interest to you

2. The methodology is the same as for Phase 1 (i.e., a) fill out information on a data sheet needed to trace complaint histories to occurrence/incident reports, b) if possible, locate an occurrence report, c) note discrepancies, and d) summarize the results).

3. Steps taken to choose the sample(s) of violations are illustrated in the following example.

Example:

The following table provides the expected sample size from Phase 1 - the overall sample - for specific violations. The complete sample in Phase 1 consists of 1700 complaint histories. In the month in question, robberies constituted .84% of all offences, *based on Communications statistics.* If we multiply .0084 X 1700 we obtain an expected sample size of 14. This is the number of robberies that one would expect to find among the 1700 complaint histories in the sample of the Log. The table also contains the additional sample size required to obtain a total sample size for each violation of between 30 and 40. For example, the additional sample size for robbery (expected sample size=14) is 20. Approximations are used.

TABLE 3 - SAMPLE SIZES: SPECIFIC OFFENCES

	Assault	Robbery	B & E	Th. M.V.	Th. From M.V.	Frauds
Rate	5.99%	0.84%	4.16%	1.00%	4.75%	0.66%
Expected	102	14	71	17	81	11
Additional	**0**	**20**	**0**	**15**	**0**	**25**

Rates and expected sample sizes must be calculated using a month for which Communications statistics are available. This is necessary to provide estimates for the month to be sampled. The Communication codes were mapped against the UCR codes to the extent possible, as rates are based on Communications codes, but complaint histories are to be traced to incident/occurrence report codes.

Discussion

The purpose of this discussion is to illustrate in more detail the actual process by which one would choose the specific sample sizes.

Assault: This includes the codes for the assault and family dispute categories. This grouping seems reasonable and will provide enough cases without a special sample.

Robbery: The expected number of robberies is low. An additional sample is required. There were 315 robberies in the month of March for a daily average of slightly more than 10. It should be noted that the reported daily average of robberies is only 2.45. There is a significant difference between the Communications' and the Records' figures for robberies. If Communications' number of robberies is high relative to Records' number, the sample size must be increased. It is recommended that a sample of all the robberies that occurred in 10 days be requested, thus achieving an expected sample size of 100 robberies reported from Communications. Only 25 robberies would be expected from Records.

Break and Enter: The expected number of break and enter complaints will be sufficient. It will provide an anticipated sample size of 71 (36 residential B&E's, 22 business B&E's, and 12 other B&E's) at the Communication level, and slightly less at the Records level.

Theft: The Communications codes do not disaggregate the theft category. The expected number of thefts is 173. If we assume that the distribution of thefts is consistent within the Communications codes and the UCR classification, then the expected sample size for thefts from motor vehicles will be equal to 81, a sufficient number. The expected number of thefts of motor vehicles is 17 which is not enough. An additional sample of 10 to 20 cases should be selected. There were 290 offences of thefts of motor vehicles in the month of March, averaging 9 per day. A sample of two days would be sufficient for this period.

Fraud: The number of Fraud complaints will not be sufficient. There were 244 frauds reported by Communications (and 288 UCR offences reported by Records) in March, for a daily average of 8. An additional sample of 3 days would be sufficient in this case.

In our discussion we have suggested a number of changes to Table 3. Please see Table 4.

TABLE 4 - REVISED ADDITIONAL SAMPLES

	Assault	Robbery	B & E	Th. M.V.	Theft from M.V.	Frauds
Additional Sample Size	XX	100	XX	18	XX	24
Offences Per Day		10		9		8
Number Days Required		10		2		3

Recommendation: That a sample of all robbery incidents be chosen for 10 days, and a sample of all theft motor vehicle and all fraud be selected for 3 days. Note that a single sample of three days is used for both theft motor vehicle and fraud, even though this is one day more than is needed for theft motor vehicle. This reduces the burden of sampling: two samples are used instead of three.

The reader will note that the additional number of robberies required has increased from 20 in Table 3 to 100 in Table 4. This increase reflects the disparity between Communications sampled here and Records, to which the robberies are to be traced. There are far more robberies in Communications than Records. It is necessary to over-sample Communications in order to get the necessary number of robberies in Records. This discrepancy does not exist for the other offences in Table 3 and Table 4.

4. For each sample, choose the skip interval by dividing the number of days in the month by the number of days in each sample.

Example:

Month = 31 days
Sample = 3 days (Th. M.V & Fraud)
Interval = 31/3 = 10
Sample = 10 days (Robbery)
Interval = 31/10 = 3

5. Choose a starting day of the month that is less than or equal to the skip interval. For example, with a skip interval of 3 for robbery, you could choose the first, second, or third day of the month. Do not choose a day in order to include or avoid including a specific complaint or complaints.

6. If the first day of the sample were the second (the second day of the month), the robbery sample would be chosen by increments equal to the skip interval (3) (e.g., the 2nd, the 5th, the 8th, the 11th, the 14th ...etc.). For the theft motor vehicle and fraud

sample, the start might be the 8th. Then the days chosen would be the 8th, the 18th, and the 28th, as the skip interval for this sample is 10.[1]

7. Request all the complaint histories for the additional days sampled for each specific offence (i.e., robbery, theft motor vehicle, and fraud).

Sample Communications Component Results

Tables 5, 6, and 7 provide data from hypothetical police departments. Table 5 contains the total proportion of calls which result in both a complaint history and an occurrence report.

TABLE 5 - SUMMARY OF INFORMATION SURVIVAL

Telephone Component	Communications Component	Total
90.9 %	89.1 %	80.3 %

The total proportion surviving (.803) is equal to the product of the proportion surviving the telephone component times the proportion surviving the communications component. In this case, the force is losing about 20% of incoming incidents between the initial telephone call and the writing of an incident/occurrence report.

Table 6 summarizes the results for the overall sample (Phase 1) of the Communications component for another police department.

[1] Avoid picking the same day of the week for all sample days. This is clearest with a sample of 4 days. This will result in a skip interval of 7 and the same day of the week will always be chosen, using the method in Step 6. For example, following a start on Monday, May 6, there would follow Monday, May 13, Monday, May 20, and Monday, May 27. First try the method in Step 6. However, if the same days of the week are obtained over and over again, then put the days of the week in a hat and blindly select a sample of days of the week equal to the sample size, for example, 4 days of the week. Then for each day of the week chosen, put the 4 days of the month when that weekday occurs in a hat and blindly select one day.

TABLE 6 - OVERALL SAMPLE: COMMUNICATIONS COMPONENT

OFFENCE	ERROR OF OMISSION	FILE MISSING	SCORED CORRECTLY	CLASSIFICATION ERRORS	TOTAL
Robbery					
Firearms			1		1
Other offensive weapons			2	1(Scored Other Robbery)	3
Other robbery			1		1
Break & Enter					
Business premises		1	12		13
Residence		2	18		20
Other B&E		1	8		9
Theft-Motor Vehicle					
Automobiles		2	8		10
Trucks			1		1
Other motor vehicles			1		1
Theft Over $5,000					
Bicycles					0
From motor vehicles			1	1(Scored Theft Under)	2
Other thefts over $5,000					0
Theft $5000 and Under					
Bicycles			15		15
From motor vehicles			66		66
Shoplifting			9		9
Other thefts $5,000 and under			27		27
Have Stolen Goods					0
Frauds					
Cheques			3		3
Credit Card			1	2 (2 stolen credit cards; 1 scored as lost property; 1 scored as theft under)	3
Other fraud		1	3		4
Offensive Weapons					
Other offensive weapons					
Other Criminal Code					
Disturb the peace				1 (Scored as general complaint)	1
Indecent act			2		2
Mischief over $5,000			1		1
Mischief $5,000 and under			44		44
Other criminal code offences			5		5
Assault					
Sexual assault	1		1		2
Assault level 1			7	1(Scored as missing juvenile)	8
Assault with weapon or causing bodily harm level 2			3		3
No Exact Match With UCR Cat.'s					
Theft	1				1
Drugs		1			1
Should not be scored				1 (no charges-Resist arrest)	1
TOTALS	2	8	240	7	257

In Table 6, "Error of Omission" refers to a complaint history that did not have a corresponding incident/occurrence report. There are only two of these cases for this department. On the other hand, there are a somewhat larger number of classification errors, indicating a (small) problem in interpreting UCR scoring rules.

Table 7 presents results for a specific offence - fraud - from Phase 2.

TABLE 7 - FRAUD (Specific Offence)

	Additional Sample	Overall Sample	Total of Both Samples
Scored Actual	16	9	25
Error Of Omission	0	0	0
Scored Unfounded	1	1	2
Scored Other Offence	2	NA	2
No Offence	1	0	1
Missing Files	0	1	1
Duplicate Call	0	0	0
Double Scored	NA	NA	NA
Other Force	0	0	0

NA = Not Available

The results for the additional sample for fraud are identical for Errors of Omission to the overall sample (i.e. zero). In general, there are no serious discrepancies between the two samples, indicating that fraud presents few problems for this department from a data quality perspective.

2.3 RECORDS COMPONENT

The objective of the Records Component is to identify coding errors and over/under reporting of offences. This source of error may be due to misinterpretation of UCR scoring rules or to computer programming errors (e.g., when transmitting the data to the CCJS). This component consists of three phases: analyzing an overall sample, analyzing a specific offence sample, and analyzing a clearance sample. Since the purpose of the initial phase is to assess the accuracy of UCR scoring, it should always be included. Conducting an assessment of specific offences will depend upon whether or not any stand out as problematic. Finally, clearances will be investigated when it is suspected that the clearance rate may be excessive.

If a force has only one reader (i.e., a person scoring offences) it will be necessary to exchange readers with another force. It is not desirable for a single reader to be checking his/her own work.

Resources

One half-day should be allotted to become familiar with the methodology. The actual tasks are estimated to take about 25 hours for one person. Interpretation of the results could take another half-day, for a total of 32 hours or 4.5 days.

Summary of Procedures

Phase 1: Overall Sample

- Select a sample of occurrence/incident reports that will ensure a final sample of 250 offences. To ensure that 250 offences will be obtained, a target of 280 should be used.

- Obtain a print copy of the sampled occurrence reports, including the offence information.

- Read all sample occurrence reports and identify whether the offences are within scope (i.e., federal).

- Identify the coding errors in the following UCR fields. Note that two data sheets are provided to collect the required information (the Records Component Detailed Table and the Records Component Summary Table; both in Appendix A).
  - reported
  - unfounded
  - actual
  - cleared by charge

- cleared otherwise

- Identify computer errors in the UCR information that was sent to CCJS by comparing the occurrence/incident reports to the computer file sent for the month sampled.

- Summarize the findings and calculate the error rate.

Phase 2: Samples for Specific Offences

The purpose of this phase is to concentrate the investigation on specific offences that are of interest to you. Coding errors such as those that may occur when classifying the three types of break and enter, will be identified.

- Select a sample of files of one or more specific UCR offences that are of interest to your department.

- Complete the remaining steps in Phase 1.

Phase 3: Clearance Sample

The purpose of this phase is to get an overall assessment of the departmental policies and practices in reporting clearances.

- Select a sample of occurrence/incident reports.

- Obtain a print copy of the sampled occurrence/incident reports, including the UCR-related information.

- Read all the sample files and identify whether or not they are within scope (i.e., federal).

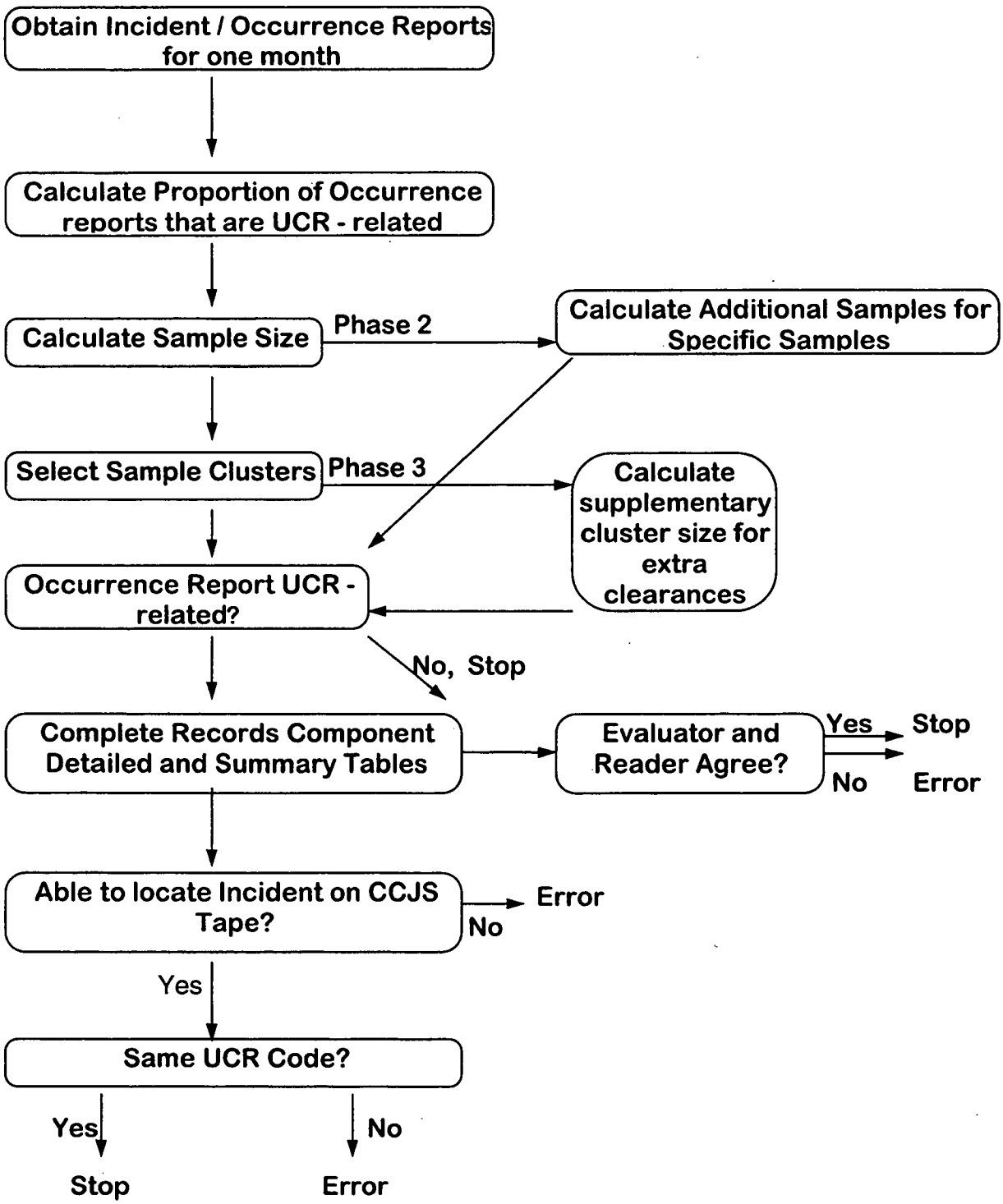
- Identify the coding errors in the following UCR fields:
  - cleared by charge
  - cleared otherwise

- Identify the computer errors in the UCR clearance information that was sent to the CCJS.

- Summarize the findings and calculate the error rate.

Phase 1, Phase 2 and Phase 3 of the Records component are summarized in Chart 3.

Chart 3. Summary of Records Component



Detailed Procedures

Phase 1: Overall Sample

This phase applies the Phase 1 methodology from the Communications Component.

1. Compute the average number of UCR incidents per occurrence/incident report based on a preceding month's statistics. For one force this is .4336.

2. Divide this number into the target sample size (a sample size of at least 250 is required; a target of 280 is desirable).

Example:

Target UCR Sample Size	=	280
Ratio	=	.4336
Required # Occurrence Reports	=	280 / .4336 = 646

Recommendation: select a sample size of 650 files in this example.

3. Select clusters of 25 occurrence/incident reports (i.e., 26 clusters (650/25 = 26)). The methodology for choosing the sample is otherwise identical to the Communications component: choose a month, compute the skip interval by dividing the number of clusters into the number of incident/occurrence reports for the month, choose a starting point, identify the first element in each cluster, and identify the remaining elements in each cluster.

4. Identify the incident/occurrence reports within scope (i.e., federal), and examine them for coding errors.

5. Compare incident/occurrence report UCR scores to those sent to the CCJS. Examine them for transmittal errors.

Phase 2: Samples for Specific Offences

This phase uses the same methodology as Phase 2 in the Communications component for drawing the samples with one exception: the sample is drawn from the Records occurrence/incident reports rather than the Communications log. Once the samples are drawn, examine the specific offences for coding errors.

Phase 3: Clearance Sample

1. The desired sample size is 250. To obtain this number of clearances it is necessary to supplement the Phase 1 sample by increasing the cluster size as follows:

a. Calculate the clearance rate (i.e., divide the number of clearances by the number of offences).

Example:

UCR Offences = 6280
Clearances = 1777
Clearance Rate = 1777/6280 = .283

b. Calculate the expected sample of clearances from Phase 1 of the Records Component. Multiply the number of occurrence/incident reports required (from Phase 1) by the average number of offences per occurrence/incident report, then multiply this number by the clearance rate.

Example:

Occurrence Reports Required = 650
Av. # UCR Incidents Per Occurrence Report = .4336
Clearance Rate = .283

Expected Clearances (Phase 1) = 650 X .4336 X .283 = 80

c. In total, 250 clearances are needed; Phase 1 will provide only 80. Therefore an additional 170 clearances are required.

Example:

Target Sample Size = 250
Expected Clearances (Phase 1) = 80
Additional Clearances = 250 - 80 = 170

d. Given that an additional 170 clearances are required, calculate the number of additional occurrence/incident reports needed. Divide the additional clearances required by the average number of offences per occurrence report, then multiply this number by the clearance rate.

Example:

Additional Clearances = 170
Av. # UCR Incidents Per Occurrence Report = .4336
Clearance Rate = .283

Additional Occurrence Reports= 170 / (.4336 X .283) = 1385

e. Calculate the number of additional occurrence/incident reports which must be added to each cluster (in Phase 1). Divide the number of additional occurrence reports by the number of clusters.

Example:

Additional Occurrence Reports = 1385
Number of Clusters (Phase 1) = 26
Additional Reports per Cluster = 1385 / 26 = 53

f. Calculate the expanded (Phase 3) cluster size by adding the additional occurrence/incident reports per cluster to the original Phase 1 cluster size.

Example:

Original Phase 1 Cluster Size = 25
Additional Reports Per Cluster = 53
Expanded Phase 3 Cluster Size = 25 + 53 = 78

Since 80 is a more convenient number with which to work than 78, a cluster size of 80 is recommended.

Note: This is not the same sample as in Phase 1, although there is overlap. Both the Phase 1 sample and this Phase 3 sample have the same 25 occurrence/incident reports at the beginning of each cluster. Therefore you would use the Phase 1 sample as the basis for the Phase 3 sample, by simply adding to the Phase 1 sample. It is not necessary to compute a new skip interval or to choose the beginning of the first cluster and each subsequent cluster. Use the start of the clusters already available from Phase 1. However, each cluster would be expanded to include not only the existing initial 25 occurrence / incident reports, but an additional sequential 55 files for a total of 80 files per cluster. Full scoring information would be recorded for the first 25 occurrence/incident reports, including clearance information, while only clearance data would be recorded for the final 55 occurrence/incident reports. Since Phase 3 includes all the information (and more) generated by Phase 1, you would in practice not complete Phase 1 except for the necessary calculations required for the Clearance sample (assuming you wished to complete the Clearance Phase).

2. Examine occurrence/incident reports with clearances for correct scoring of UCR clearance rules.

Sample Records Component Results

Table 8 shows the Records offence coding errors for a hypothetical police force:

TABLE 8 - RECORDS OFFENCE CODE ERRORS

	Frequency	Per Cent
Entirely Correct*	280	95.2
Misclassified	6	2.0
Not Scored	4	1.4
Not An Offence	1	0.3
Incorrect Offence Code Keyed	3	1.0
Total	294**	100.0

* Excludes clearance errors.
** Equals Scored Actual (302) or Unfounded (2) or Not Scored (4) less File Missing (14) = 294.

Of the 294 offences, 95.2% were entirely correct in their scoring. Six were misclassified, 4 offences which should have been scored were not scored and one incident was scored although it did not involve an offence (the reverse situation). Finally, there were three computer keying errors. Of overall importance, this department had few problems in the area of interpretation of UCR scoring rules.

PART 3 - REMARKS

The intent of this guide is to lead a team of police officers in a step-by-step evaluation of their own record-keeping system. There will be cases where the language, assumptions, and examples in the guide do not mesh completely with those of a particular departmental system. There will also be cases where a department may find a section, such as the in-depth analysis of a specific offence, of little relevance. Finally, resources may limit the application of this guide, as in the case of smaller departments which cannot reasonably implement the telephone component.

The types of errors which this guide will help to detect may be characterised as quantitative or qualitative. The former have to do with the degree to which incidents, once they become known to the police, are retained in the record-keeping system. These easily quantifiable errors are referred to as errors of omission in the guide. These errors of omission, which are most frequent, occur at the interface of the Telephone and Communications areas, as well as at the interface of the Communications and Records areas.

The qualitative errors are scoring errors in Records, and inconsistencies between telephone calls and complaint histories. As well, errors arise from inconsistencies between complaint histories and occurrence/incident reports. Lastly, computer-based errors can occur (i.e., keypunching or programming mistakes).

The sections of the guide may be graded in terms of priority. At the core of the methodology is the search for loss of incidents in the record-keeping system. Therefore, wherever possible, the telephone component should be included, as well as the overall sample of the communications component. Next in importance are scoring errors, revealed in the overall sample of the records component. It would be desirable for every department to check for data transmittal errors (between the incident/occurrence reports and the tape sent to CCJS), also identified in the records component. If the evaluators suspect problems, they may wish to analyse specific offences further using the communications component methodology, as well as that of the records component. Finally, a methodology is presented for assessing the correct scoring of clearances.

Appendix A

Data Sheets — All Components

Examples on Forms

Blank Forms

INSTRUCTIONS:

DATA SHEETS

1. There are four blank forms: the Telephone Component Table (Pages A and B), the Communications Component Table (Pages A and B), the Records Component Detailed Table (Pages A and B), and the Records Component Summary Table (one page). Each row in Page B in the two-page tables is a continuation of the same row in Page A.

2. It will be necessary to make multiple copies of each of these blank forms.

3. If your force utilizes UCR2 (Incident-based UCR), you will wish to use UCR2 violation codes rather than the aggregate UCR1 codes.

The degree of detail you pursue in the Records Component , if you are using UCR2 codes, is subject to choice. At a minimum you will wish to check the coding and data capture of these UCR violation codes, such as 2120 for Break and Enter. There is also a supplementary field for Break and Enter which can take on the values: Commercial, Residential, and Other. If you suspect problems in the latter field, you will want to verify the correct data capture of this element. There are a number of other UCR2 violation codes, notably Theft, which have such ancillary fields.

4. If your department no longer uses UCR Form C as required on the Records Component Detailed Table, you will wish to use the current replacement for Form C, such as a printout of the tape sent to CCJS.

5. The data sheets are presented in two series: first, with a few lines of example data on each page; then entirely blank. The entirely blank forms are to be photocopied and filled with your data.

TELEPHONE COMPONENT TABLE-Page # _____-A

Date of Tape:----------

Ref #	Track	Line	Time	Complainant		Location of incident	Date of incident	Type of Complaint		Police Response	
				Name	Address			Complainant	Police	Dispatch	Report
1	4	COMP	10:38	Schmidt, Althea	406 - 6th Ave. 225 - 7867	Lane at rear of building	5/14	stolen bike			x
2	1	911	00:11	Harry Smith New Cars Larry Jones	Magpie Trail and Western Parkway	Theft from vehicle	5/14	Reported as robbery on phone		x	

TELEPHONE COMPONENT TABLE—Page # _____-B						
Ref #	Communications or Records		Type of Report (e.g. 10 Code)	Error		
	Complaint #	Incident / Occurrence Report #		Missing on Both	Discrepancy	Description and Comments
1		890267	10:34			Not on communications but Report
2	073521		10:34			

COMMUNICATIONS COMPONENT TABLE-Page #---- ____ ----A

Ref #	Sample Overall	Sample Specific	Complaint #	Date of Complaint	Time	Complainant Name	Complainant Address	Location of incident	Date of incident	Type of complaint eg. 10 code
1	x		132	4/9	12:53	Corner Grocery	107B - 96 St	x	x	9160 - Theft
2	x		139	4/9	13:04	Bill Cook	14816 Maple Ave.	x	x	9160 Theft from Auto

COMMUNICATIONS COMPONENT TABLE-Page #----_____----B

Ref #	Report Incidence / Occurrence #	Report Description (UCR Code or Missing)	Communication Description (Narrative)	Discrepancies Y	Discrepancies N	Discrepancies Description / comments
1	116856	040	Theft of sundries from store		N	
2	116853	038	Theft from Auto		N	

RECORDS COMPONENT---DETAILED TABLE Page #____A

Ref #	Sample			Report Incident / Occurrence #	Evaluator Classification (UCR Code)	Reader Classif. (UCR Code)	UCR Form C Classif.	Errors in Classification	
	Over	Clear	Spec					Reader	UCR
1	x			243128	035	036	036	x	
2	x			243153	038	038	038		

RECORDS COMPONENT---DETAILED TABLE Page # _____B

Ref. #	Status of the Incident								Error in Status	Comments
	Evaluator				Reader					
	Un	Act	Cl. Ch	Cl. Oth	Un	Act	Cl. Ch	Cl Oth		
1		x				x	x		x	
2		x				x				

RECORDS COMPONENT - SUMMARY TABLE OF ERRORS

UCR Offence coded by reader	Status	Counts by reader	Not an offence but coded by reader)	File Not Avail-able	Offence properly coded		Offence not coded properly by Reader			Transmittal errors on tapes sent to CCJS		
					Incorrectly cleared by reader	Clearance missed by reader	Correct offence code from evaluator	Errors in clearance		Incorrect offence code	Errors In clearance	
								Incorrect	Missed		Incorrect	Missed
	U											
	A	x x x x										
19	CC	x x										
	CO											
	U											
	A											
	CC											
	CO											
	U											
	A											
	CC											
	CO											
	U											
	A											
	CC											
	CO											
	U											
	A											
	CC											
	CO											
	U											
	A											
	CC											
	CO											

BLANK FORMS

TELEPHONE COMPONENT TABLE-Page # _____-A

Date of Tape:----------

Ref #	Track	Line	Time	Complainant		Location of Incident	Date of Incident	Type of Complaint		Police Response	
				Name	Address			Complainant	Police	Dispatch	Report

TELEPHONE COMPONENT TABLE—Page # _____-B						
Ref #	Communications or Records		Type of Report (e.g. 10 Code)	Error		
	Complaint #	Incident / Occurrence Report #		Missing on Both	Discrepancy	Description and Comments

COMMUNICATIONS COMPONENT TABLE-Page #----_____----A

Ref #	Sample		Complaint #	Date of Complaint	Time	Complainant		Location of incident	Date of incident	Type of complaint eg. 10 code
	Overall	Specific				Name	Address			

COMMUNICATIONS COMPONENT TABLE-Page #----_____----B						
Ref #	Report Incidence / Occurrence #	Report Description (UCR Code or Missing)	Communication Description (Narrative)	Y	N	Discrepancies Description / comments

RECORDS COMPONENT—DETAILED TABLE Page #_____A

Ref #	Sample			Report Incident / Occurrence #	Evaluator Classification (UCR Code)	Reader Classif. (UCR Code)	UCR Form C Classif.	Errors in Classification	
	Over	Clear	Spec					Reader	UCR

RECORDS COMPONENT—DETAILED TABLE Page # _____B

Ref. #	Status of the Incident								Error in Status	Comments
	Evaluator				Reader					
	Un	Act	Cl. Ch	Cl. Oth	Un	Act	Cl. Ch	Cl Oth		

RECORDS COMPONENT - SUMMARY TABLE OF ERRORS

UCR Offence coded by reader	Status	Counts by reader	Not an offence but coded by reader)	File Not Avail-able	Offence properly coded		Offence not coded properly by Reader			Transmittal errors on tapes sent to CCJS		
					Incorrectly cleared by reader	Clearance missed by reader	Correct offence code from evaluator	Errors In clearance		Incorrect offence code	Errors In clearance	
								Incorrect	Missed		Incorrect	Missed
	U											
	A											
	CC											
	CO											
	U											
	A											
	CC											
	CO											
	U											
	A											
	CC											
	CO											
	U											
	A											
	CC											
	CO											
	U											
	A											
	CC											
	CO											
	U											
	A											
	CC											
	CO											

Appendix B

Sample Tables

INSTRUCTIONS:

SAMPLE TABLES

1. Based on Table 1 in the Telephone Component section, choose the correct Sample Table for your department's Criminal Code total of incidents in the most recent year available.

2. Listen to all UCR-related conversations beginning in the time periods marked with an "X" in the Sample Table chosen, and follow the Detailed Procedures in the Telephone Component section of this Guide.

N.B.: Each table consists of two pages: Page A and Page B. Make sure you do not overlook Page B.

SAMPLE TABLE "A" Page A

TIME	DAY OF THE MONTH						
	3rd	7th	11th	15th	19th	23rd	27th
2400/0014			X				
0015/0029							
0030/0044							
0045/0059					X		
0100/0114							
0115/0129							
0130/0144							X
0145/0159							
0200/0214							
0215/0229							
0230/0244		X					
0245/0259							
0300/0314							
0315/0329				X			
0330/0344							
0345/0359							
0400/0414						X	
0415/0429							
0430/0444							
0445/0459							
0500/0514	X						
0515/0529							
0530/0544							
0545/0559			X				
0600/0614							
0615/0629							
0630/0644					X		
0645/0659							
0700/0714							
0715/0729							X
0730/0744							
0745/0759							
0800/0814							
0815/0829		X					
0830/0844							
0845/0859							
0900/0914				X			
0915/0929							
0930/0944							
0945/0959						X	
1000/1014							
1015/1029							
1030/1044							
1045/1059	X						
1100/1114							
1115/1129							
1130/1144			X				
1145/1159							

SAMPLE TABLE "A" Page B

TIME	DAY OF THE MONTH						
	3rd	7th	11th	15th	19th	23rd	27th
1200/1214							
1215/1229					X		
1230/1244							
1245/1259							
1300/1314							X
1315/1329							
1330/1344							
1345/1359							
1400/1414		X					
1415/1429							
1430/1444							
1445/1459				X			
1500/1514							
1515/1529							
1530/1544						X	
1545/1559							
1600/1614							
1615/1629							
1630/1644	X						
1645/1659							
1700/1714							
1715/1729			X				
1730/1744							
1745/1759							
1800/1814					X		
1815/1829							
1830/1844							
1845/1859							X
1900/1914							
1915/1929							
1930/1944							
1945/1959		X					
2000/2014							
2015/2029							
2030/2044				X			
2045/2059							
2100/2114							
2115/2129						X	
2130/2144							
2145/2159							
2200/2214							
2215/2229	X						
2230/2244							
2245/2259							
2300/2314			X				
2315/2329							
2330/2344							
2345/2359					X		

SAMPLE TABLE "B" Page A

TIME	DAY OF THE MONTH						
	3rd	7th	11th	15th	19th	23rd	27th
2400/0014		X					
0015/0029							
0030/0044							X
0045/0059							
0100/0114							
0115/0129					X		
0130/0144							
0145/0159							
0200/0214			X				
0215/0229							
0230/0244							
0245/0259	X						
0300/0314							
0315/0329						X	
0330/0344							
0345/0359							
0400/0414				X			
0415/0429							
0430/0444							
0445/0459		X					
0500/0514							
0515/0529							X
0530/0544							
0545/0559							
0600/0614					X		
0615/0629							
0630/0644							
0645/0659			X				
0700/0714							
0715/0729							
0730/0744	X						
0745/0759							
0800/0814						X	
0815/0829							
0830/0844							
0845/0859				X			
0900/0914							
0915/0929							
0930/0944		X					
0945/0959							
1000/1014							X
1015/1029							
1030/1044							
1045/1059					X		
1100/1114							
1115/1129							
1130/1144			X				
1145/1159							

SAMPLE TABLE "B" Page B

TIME	DAY OF THE MONTH						
	3rd	7th	11th	15th	19th	23rd	27th
1200/1214							
1215/1229	X						
1230/1244							
1245/1259						X	
1300/1314							
1315/1329							
1330/1344				X			
1345/1359							
1400/1414							
1415/1429		X					
1430/1444							
1445/1459							X
1500/1514							
1515/1529							
1530/1544					X		
1545/1559							
1600/1614							
1615/1629			X				
1630/1644							
1645/1659							
1700/1714	X						
1715/1729							
1730/1744						X	
1745/1759							
1800/1814							
1815/1829				X			
1830/1844							
1845/1859							
1900/1914		X					
1915/1929							
1930/1944							X
1945/1959							
2000/2014							
2015/2029					X		
2030/2044							
2045/2059							
2100/2114			X				
2115/2129							
2130/2144							
2145/2159	X						
2200/2214							
2215/2229						X	
2230/2244							
2245/2259							
2300/2314				X			
2315/2329							
2330/2344							
2345/2359		X					

SAMPLE TABLE "C" Page A

TIME	DAY OF THE MONTH						
	3rd	7th	11th	15th	19th	23rd	27th
2400/0014	X						
0015/0029						X	
0030/0044							
0045/0059				X			
0100/0114							
0115/0129		X					
0130/0144							X
0145/0159							
0200/0214					X		
0215/0229							
0230/0244			X				
0245/0259							
0300/0314	X						
0315/0329						X	
0330/0344							
0345/0359				X			
0400/0414							
0415/0429		X					
0430/0444							X
0445/0459							
0500/0514					X		
0515/0529							
0530/0544			X				
0545/0559							
0600/0614	X						
0615/0629						X	
0630/0644							
0645/0659				X			
0700/0714							
0715/0729		X					
0730/0744							X
0745/0759							
0800/0814					X		
0815/0829							
0830/0844			X				
0845/0859							
0900/0914	X						
0915/0929						X	
0930/0944							
0945/0959				X			
1000/1014							
1015/1029		X					
1030/1044							X
1045/1059							
1100/1114					X		
1115/1129							
1130/1144			X				
1145/1159							

SAMPLE TABLE "C" Page B

TIME	DAY OF THE MONTH						
	3rd	7th	11th	15th	19th	23rd	27th
1200/1214	X						
1215/1229						X	
1230/1244							
1245/1259				X			
1300/1314							
1315/1329		X					
1330/1344							X
1345/1359							
1400/1414					X		
1415/1429							
1430/1444			X				
1445/1459							
1500/1514	X						
1515/1529						X	
1530/1544							
1545/1559				X			
1600/1614							
1615/1629		X					
1630/1644							X
1645/1659							
1700/1714					X		
1715/1729							
1730/1744			X				
1745/1759							
1800/1814	X						
1815/1829						X	
1830/1844							
1845/1859				X			
1900/1914							
1915/1929		X					
1930/1944							X
1945/1959							
2000/2014					X		
2015/2029							
2030/2044			X				
2045/2059							
2100/2114	X						
2115/2129						X	
2130/2144							
2145/2159				X			
2200/2214							
2215/2229		X					
2230/2244							X
2245/2259							
2300/2314					X		
2315/2329							
2330/2344			X				
2345/2359							

SAMPLE TABLE "D" Page A

TIME	DAY OF THE MONTH						
	3rd	7th	11th	15th	19th	23rd	27th
2400/0014				X			
0015/0029						X	
0030/0044							
0045/0059	X						
0100/0114			X				
0115/0129					X		
0130/0144							X
0145/0159							
0200/0214		X					
0215/0229				X			
0230/0244						X	
0245/0259							
0300/0314	X						
0315/0329			X				
0330/0344					X		
0345/0359							X
0400/0414							
0415/0429		X					
0430/0444				X			
0445/0459						X	
0500/0514							
0515/0529	X						
0530/0544			X				
0545/0559					X		
0600/0614							X
0615/0629							
0630/0644		X					
0645/0659				X			
0700/0714						X	
0715/0729							
0730/0744	X						
0745/0759			X				
0800/0814					X		
0815/0829							X
0830/0844							
0845/0859		X					
0900/0914				X			
0915/0929						X	
0930/0944							
0945/0959	X						
1000/1014			X				
1015/1029					X		
1030/1044							X
1045/1059							
1100/1114		X					
1115/1129				X			
1130/1144						X	
1145/1159							

SAMPLE TABLE "D" Page B

TIME	DAY OF THE MONTH						
	3rd	7th	11th	15th	19th	23rd	27th
1200/1214	X						
1215/1229			X				
1230/1244					X		
1245/1259							X
1300/1314							
1315/1329		X					
1330/1344				X			
1345/1359						X	
1400/1414							
1415/1429	X						
1430/1444			X				
1445/1459					X		
1500/1514							X
1515/1529							
1530/1544		X					
1545/1559				X			
1600/1614						X	
1615/1629							
1630/1644	X						
1645/1659			X				
1700/1714					X		
1715/1729							X
1730/1744							
1745/1759		X					
1800/1814				X			
1815/1829						X	
1830/1844							
1845/1859	X						
1900/1914			X				
1915/1929					X		
1930/1944							X
1945/1959							
2000/2014		X					
2015/2029				X			
2030/2044						X	
2045/2059							
2100/2114	X						
2115/2129			X				
2130/2144					X		
2145/2159							X
2200/2214							
2215/2229		X					
2230/2244				X			
2245/2259						X	
2300/2314							
2315/2329	X						
2330/2344			X				
2345/2359					X		

SAMPLE TABLE "E" Page A

TIME	DAY OF THE MONTH						
	3rd	7th	11th	15th	19th	23rd	27th
2400/0014						X	
0015/0029					X		
0030/0044				X			
0045/0059			X				
0100/0114		X					
0115/0129	X						X
0130/0144						X	
0145/0159					X		
0200/0214				X			
0215/0229			X				
0230/0244		X					
0245/0259	X						X
0300/0314						X	
0315/0329					X		
0330/0344				X			
0345/0359			X				
0400/0414		X					
0415/0429	X						X
0430/0444						X	
0445/0459					X		
0500/0514				X			
0515/0529			X				
0530/0544		X					
0545/0559	X						X
0600/0614						X	
0615/0629					X		
0630/0644				X			
0645/0659			X				
0700/0714		X					
0715/0729	X						X
0730/0744						X	
0745/0759					X		
0800/0814				X			
0815/0829			X				
0830/0844		X					
0845/0859	X						X
0900/0914						X	
0915/0929					X		
0930/0944				X			
0945/0959			X				
1000/1014		X					
1015/1029	X						X
1030/1044						X	
1045/1059					X		
1100/1114				X			
1115/1129			X				
1130/1144		X					
1145/1159	X						X

SAMPLE TABLE "E" Page B

TIME	DAY OF THE MONTH						
	3rd	7th	11th	15th	19th	23rd	27th
1200/1214						X	
1215/1229					X		
1230/1244				X			
1245/1259			X				
1300/1314		X					
1315/1329	X						X
1330/1344						X	
1345/1359					X		
1400/1414				X			
1415/1429			X				
1430/1444		X					
1445/1459	X						X
1500/1514						X	
1515/1529					X		
1530/1544				X			
1545/1559			X				
1600/1614		X					
1615/1629	X						X
1630/1644						X	
1645/1659					X		
1700/1714				X			
1715/1729			X				
1730/1744		X					
1745/1759	X						X
1800/1814						X	
1815/1829					X		
1830/1844				X			
1845/1859			X				
1900/1914		X					
1915/1929	X						X
1930/1944						X	
1945/1959					X		
2000/2014				X			
2015/2029			X				
2030/2044		X					
2045/2059	X						X
2100/2114						X	
2115/2129					X		
2130/2144				X			
2145/2159			X				
2200/2214		X					
2215/2229	X						X
2230/2244						X	
2245/2259					X		
2300/2314				X			
2315/2329			X				
2330/2344		X					
2345/2359	X						X

SAMPLE TABLE "F" Page A

TIME	DAY OF THE MONTH						
	3rd	7th	11th	15th	19th	23rd	27th
2400/0014					X		
0015/0029			X				
0030/0044	X					X	
0045/0059				X			
0100/0114		X					X
0115/0129					X		
0130/0144			X				
0145/0159	X					X	
0200/0214				X			
0215/0229		X					X
0230/0244					X		
0245/0259			X				
0300/0314	X					X	
0315/0329				X			
0330/0344		X					X
0345/0359					X		
0400/0414			X				
0415/0429	X					X	
0430/0444				X			
0445/0459		X					X
0500/0514					X		
0515/0529			X				
0530/0544	X					X	
0545/0559				X			
0600/0614		X					X
0615/0629					X		
0630/0644			X				
0645/0659	X					X	
0700/0714				X			
0715/0729		X					X
0730/0744					X		
0745/0759			X				
0800/0814	X					X	
0815/0829				X			
0830/0844		X					X
0845/0859					X		
0900/0914			X				
0915/0929	X					X	
0930/0944				X			
0945/0959		X					X
1000/1014					X		
1015/1029			X				
1030/1044	X					X	
1045/1059				X			
1100/1114		X					X
1115/1129					X		
1130/1144			X				
1145/1159	X					X	

SAMPLE TABLE "F" Page B

TIME	DAY OF THE MONTH						
	3rd	7th	11th	15th	19th	23rd	27th
1200/1214				X			
1215/1229		X					X
1230/1244					X		
1245/1259			X				
1300/1314	X					X	
1315/1329				X			
1330/1344		X					X
1345/1359					X		
1400/1414			X				
1415/1429	X					X	
1430/1444				X			
1445/1459		X					X
1500/1514					X		
1515/1529			X				
1530/1544	X					X	
1545/1559				X			
1600/1614		X					X
1615/1629					X		
1630/1644			X				
1645/1659	X					X	
1700/1714				X			
1715/1729		X					X
1730/1744					X		
1745/1759			X				
1800/1814	X					X	
1815/1829				X			
1830/1844		X					X
1845/1859					X		
1900/1914			X				
1915/1929	X					X	
1930/1944				X			
1945/1959		X					X
2000/2014					X		
2015/2029			X				
2030/2044	X					X	
2045/2059				X			
2100/2114		X					X
2115/2129					X		
2130/2144			X				
2145/2159	X					X	
2200/2214				X			
2215/2229		X					X
2230/2244					X		
2245/2259			X				
2300/2314	X					X	
2315/2329				X			
2330/2344		X					X
2345/2359					X		

SAMPLE TABLE "G" Page A

TIME	DAY OF THE MONTH						
	3rd	7th	11th	15th	19th	23rd	27th
2400/0014			X				X
0015/0029				X			
0030/0044	X				X		
0045/0059		X				X	
0100/0114			X				X
0115/0129				X			
0130/0144	X				X		
0145/0159		X				X	
0200/0214			X				X
0215/0229				X			
0230/0244	X				X		
0245/0259		X				X	
0300/0314			X				X
0315/0329				X			
0330/0344	X				X		
0345/0359		X				X	
0400/0414			X				X
0415/0429				X			
0430/0444	X				X		
0445/0459		X				X	
0500/0514			X				X
0515/0529				X			
0530/0544	X				X		
0545/0559		X				X	
0600/0614			X				X
0615/0629				X			
0630/0644	X				X		
0645/0659		X				X	
0700/0714			X				X
0715/0729				X			
0730/0744	X				X		
0745/0759		X				X	
0800/0814			X				X
0815/0829				X			
0830/0844	X				X		
0845/0859		X				X	
0900/0914			X				X
0915/0929				X			
0930/0944	X				X		
0945/0959		X				X	
1000/1014			X				X
1015/1029				X			
1030/1044	X				X		
1045/1059		X				X	
1100/1114			X				X
1115/1129				X			
1130/1144	X				X		
1145/1159		X				X	

SAMPLE TABLE "G" Page B

TIME	DAY OF THE MONTH						
	3rd	7th	11th	15th	19th	23rd	27th
1200/1214			X				X
1215/1229				X			
1230/1244	X				X		
1245/1259		X				X	
1300/1314			X				X
1315/1329				X			
1330/1344	X				X		
1345/1359		X				X	
1400/1414			X				X
1415/1429				X			
1430/1444	X				X		
1445/1459		X				X	
1500/1514			X				X
1515/1529				X			
1530/1544	X				X		
1545/1559		X				X	
1600/1614			X				X
1615/1629				X			
1630/1644	X				X		
1645/1659		X				X	
1700/1714			X				X
1715/1729				X			
1730/1744	X				X		
1745/1759		X				X	
1800/1814			X				X
1815/1829				X			
1830/1844	X				X		
1845/1859		X				X	
1900/1914			X				X
1915/1929				X			
1930/1944	X				X		
1945/1959		X				X	
2000/2014			X				X
2015/2029				X			
2030/2044	X				X		
2045/2059		X				X	
2100/2114			X				X
2115/2129				X			
2130/2144	X				X		
2145/2159		X				X	
2200/2214			X				X
2215/2229				X			
2230/2244	X				X		
2245/2259		X				X	
2300/2314			X				X
2315/2329				X			
2330/2344	X				X		
2345/2359		X				X	

SAMPLE TABLE "H" Page A

TIME	DAY OF THE MONTH						
	3rd	7th	11th	15th	19th	23rd	27th
2400/0014		X			X		
0015/0029	X			X			X
0030/0044			X			X	
0045/0059		X			X		
0100/0114	X			X			X
0115/0129			X			X	
0130/0144		X			X		
0145/0159	X			X			X
0200/0214			X			X	
0215/0229		X			X		
0230/0244	X			X			X
0245/0259			X			X	
0300/0314		X			X		
0315/0329	X			X			X
0330/0344			X			X	
0345/0359		X			X		
0400/0414	X			X			X
0415/0429			X			X	
0430/0444		X			X		
0445/0459	X			X			X
0500/0514			X			X	
0515/0529		X			X		
0530/0544	X			X			X
0545/0559			X			X	
0600/0614		X			X		
0615/0629	X			X			X
0630/0644			X			X	
0645/0659		X			X		
0700/0714	X			X			X
0715/0729			X			X	
0730/0744		X			X		
0745/0759	X			X			X
0800/0814			X			X	
0815/0829		X			X		
0830/0844	X			X			X
0845/0859			X			X	
0900/0914		X			X		
0915/0929	X			X			X
0930/0944			X			X	
0945/0959		X			X		
1000/1014	X			X			X
1015/1029			X			X	
1030/1044		X			X		
1045/1059	X			X			X
1100/1114			X			X	
1115/1129		X			X		
1130/1144	X			X			X
1145/1159			X			X	

SAMPLE TABLE "H" Page B

TIME	DAY OF THE MONTH						
	3rd	7th	11th	15th	19th	23rd	27th
1200/1214		X			X		
1215/1229	X			X			X
1230/1244			X			X	
1245/1259		X			X		
1300/1314	X			X			X
1315/1329			X			X	
1330/1344		X			X		
1345/1359	X			X			X
1400/1414			X			X	
1415/1429		X			X		
1430/1444	X			X			X
1445/1459			X			X	
1500/1514		X			X		
1515/1529	X			X			X
1530/1544			X			X	
1545/1559		X			X		
1600/1614	X			X			X
1615/1629			X			X	
1630/1644		X			X		
1645/1659	X			X			X
1700/1714			X			X	
1715/1729		X			X		
1730/1744	X			X			X
1745/1759			X			X	
1800/1814		X			X		
1815/1829	X			X			X
1830/1844			X			X	
1845/1859		X			X		
1900/1914	X			X			X
1915/1929			X			X	
1930/1944		X			X		
1945/1959	X			X			X
2000/2014			X			X	
2015/2029		X			X		
2030/2044	X			X			X
2045/2059			X			X	
2100/2114		X			X		
2115/2129	X			X			X
2130/2144			X			X	
2145/2159		X			X		
2200/2214	X			X			X
2215/2229			X			X	
2230/2244		X			X		
2245/2259	X			X			X
2300/2314			X			X	
2315/2329		X			X		
2330/2344	X			X			X
2345/2359			X			X	

SAMPLE TABLE "I" Page A

TIME	DAY OF THE MONTH						
	3rd	7th	11th	15th	19th	23rd	27th
2400/0014	X		X		X		X
0015/0029		X		X		X	
0030/0044	X		X		X		X
0045/0059		X		X		X	
0100/0114	X		X		X		X
0115/0129		X		X		X	
0130/0144	X		X		X		X
0145/0159		X		X		X	
0200/0214	X		X		X		X
0215/0229		X		X		X	
0230/0244	X		X		X		X
0245/0259		X		X		X	
0300/0314	X		X		X		X
0315/0329		X		X		X	
0330/0344	X		X		X		X
0345/0359		X		X		X	
0400/0414	X		X		X		X
0415/0429		X		X		X	
0430/0444	X		X		X		X
0445/0459		X		X		X	
0500/0514	X		X		X		X
0515/0529		X		X		X	
0530/0544	X		X		X		X
0545/0559		X		X		X	
0600/0614	X		X		X		X
0615/0629		X		X		X	
0630/0644	X		X		X		X
0645/0659		X		X		X	
0700/0714	X		X		X		X
0715/0729		X		X		X	
0730/0744	X		X		X		X
0745/0759		X		X		X	
0800/0814	X		X		X		X
0815/0829		X		X		X	
0830/0844	X		X		X		X
0845/0859		X		X		X	
0900/0914	X		X		X		X
0915/0929		X		X		X	
0930/0944	X		X		X		X
0945/0959		X		X		X	
1000/1014	X		X		X		X
1015/1029		X		X		X	
1030/1044	X		X		X		X
1045/1059		X		X		X	
1100/1114	X		X		X		X
1115/1129		X		X		X	
1130/1144	X		X		X		X
1145/1159		X		X		X	

SAMPLE TABLE "I" Page B

TIME	DAY OF THE MONTH						
	3rd	7th	11th	15th	19th	23rd	27th
1200/1214	X		X		X		X
1215/1229		X		X		X	
1230/1244	X		X		X		X
1245/1259		X		X		X	
1300/1314	X		X		X		X
1315/1329		X		X		X	
1330/1344	X		X		X		X
1345/1359		X		X		X	
1400/1414	X		X		X		X
1415/1429		X		X		X	
1430/1444	X		X		X		X
1445/1459		X		X		X	
1500/1514	X		X		X		X
1515/1529		X		X		X	
1530/1544	X		X		X		X
1545/1559		X		X		X	
1600/1614	X		X		X		X
1615/1629		X		X		X	
1630/1644	X		X		X		X
1645/1659		X		X		X	
1700/1714	X		X		X		X
1715/1729		X		X		X	
1730/1744	X		X		X		X
1745/1759		X		X		X	
1800/1814	X		X		X		X
1815/1829		X		X		X	
1830/1844	X		X		X		X
1845/1859		X		X		X	
1900/1914	X		X		X		X
1915/1929		X		X		X	
1930/1944	X		X		X		X
1945/1959		X		X		X	
2000/2014	X		X		X		X
2015/2029		X		X		X	
2030/2044	X		X		X		X
2045/2059		X		X		X	
2100/2114	X		X		X		X
2115/2129		X		X		X	
2130/2144	X		X		X		X
2145/2159		X		X		X	
2200/2214	X		X		X		X
2215/2229		X		X		X	
2230/2244	X		X		X		X
2245/2259		X		X		X	
2300/2314	X		X		X		X
2315/2329		X		X		X	
2330/2344	X		X		X		X
2345/2359		X		X		X	

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