

PROCEDURES
FOR CONDUCTING A MODIFIED
TERMINAL SWITCHING STUDY

ASSISTANT DIRECTOR -
COST SYSTEMS
PHILADELPHIA, PA
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PROCEDURES FOR CONDUCTING A MODIFIED TERMINAL SWITCHING STUDY

PURPOSE To state the methodology to be used to collect the necessary information on the movement of cars within a Terminal to insure the accurate and complete documentation of car movements, and time involved, to determine the costs of these operations.

1. A preliminary study of the selected Terminal will be made by a team, consisting of members of the several interested departments to see what information is available and where. To determine if another procedure would be more advantages than some of those proposed herein, to accomplish the necessary tasks, and/or the need for special or additional instructions to supplement these instructions. Some of the information to be obtained by the team members is indicated in Exhibit IX.

2. SOURCES OF INFORMATION

A. DETAILED FUNCTIONS OF YARD ASSIGNMENTS (EXHIBIT I-A) Prepared by the yardmaster for all engines working under his jurisdiction. Exhibit I-B is the instructions for this report. Any yard Assignment not working under the jurisdiction of a yardmaster will be accounted for by the Trainmaster or his representative. This report will be filled out each trick and verified by the Trainmaster. The Analysts will recap this sheet each day and prepare a summary for the week.

B. A copy of turnover sheets, or status reports showing cars humped/switched and advanced for each trick.

C. A copy of all completed switch lists prepared at that location for industries switched by their engines, and for industries switched by engines at other locations and prepared at that point.

D. CT-7113 A legible copy of the CT-7113 for all cars dispatched from that location to Road, Industry, Interchange, Yard to Yard, etc Another document may be maintained at the yard in lieu of the CT-7113 that gives the information, get a copy of this each day.

E. CT-7114, This form is prepared by the timekeeper from the time slips submitted by the crews, showing time on duty and all arbitraries. In an instance where a job is not entered on the CT-7114, the time may be verified by the yardmaster's verification sheet. A copy of this should be on file in the timekeeper's office.

F. PULLER WORK SHEET, EXHIBIT II, to be prepared by the puller director, (if one exists in the Terminal), or by Team Personnel from the Dispatcher's sheets. If a Puller Movement sheet is maintained by the terminal, obtain a copy of this document each day for our files. These sheets will be recapped on an Origin-Destination status and summarized at the end of the study period for the applicable seven days.

G. RIDERS REPORT OF INDUSTRIAL WORK, EXHIBIT III-A and instructions Exhibit III-B. Engine Riders will use this form to document all the work and moves of jobs selected by the marketing department to be studied. It is important that an Engine Rider Coordinator be used to control and schedule the engine riders to ensure proper coverage and utilization of engine rider personnel. Each report will be recapped at the end of each ride and summarized at the end of the study period.

H. SUMMARY SHEETS FOR YARD FUNCTIONS, EXHIBIT IV
SUMMARY SHEETS FOR PULLERS, EXHIBIT V.
SUMMARY SHEETS FOR RIDER REPORTS, EXHIBIT VI.
These reports are self explanatory.

3. CALCULATIONS

(All times on duty used should be taken from the CT-7114 Report)

A. MINUTES PER CAR CLASSIFIED

Using the weekly Summary of Yard Operations, (Use both Hump and Pull-down ends of yard, if applicable) Divide Total hours classified by total cars dispatched from yard, plus shop cars, cars to special terminals, etc to get total cars dispatched. (Cars dispatched from yard should reflect totals reported on the CT-7113, cars to shop from shop reports, cars to special terminals from T-1580's), enter the result on the Flow Chart, Exhibit VIII in the respective yard block.

B. MINUTES PER INDUSTRIAL CAR

Using the summary of the Engine Rider Reports, separate the times at industry, from all other times, and divide each total by the total cars placed and pulled. It is recommended that a recap of these jobs be developed from the T-1580's and sample of times from the rider reports (Those industries not actually serviced by an observed crew, use Trainmaster's estimated times). This will tend to show that the work done on day observed was a valid day. Try to resolve any discrepancies that may develop. Ask how these figures should be entered on the flow chart.

C. PULLER CARS

From the Puller Summary Sheet divide the total minutes by cars handled for each move between yards and other yards or location by O_D points. Enter along the leg of the corresponding move on the Flow Chart.

D. INTERCHANGE CARS

a. Minutes per car interchanged by Pullers should be available from the Puller Summary Sheet to an interchange point. Enter as indicated in C. above.

b. Minutes per car interchanged by Yard Engines, using Weekly Summary of Yard Functions, divide interchange minutes by cars inter-

changed. Where interchange is to several railroads at that yard, separate moves to each railroad, and enter on dashed line to that interchange.

4. FURTHER INSTRUCTIONS

It is strongly recommended that a form letter, (a suggested format is shown in Exhibit VII), be used for all personnel of the study team. This will show the crews and others, that the team members are authorized to ride engines for the purpose of conducting the study, and avoid embarrassing situations.

Instructions must be issued over the Superintendent's signature to all Trainmasters and others concerned, prior to the study that all forms and information requested will be completed and done in a timely manner. Also that the Trainmasters will be responsible that this is done by Yardmasters and others under their jurisdiction. Also that they verify the Yardmaster's report.

No Time Limit will be stated or inferred, such as seven days, one week, etc , to avoid any misunderstanding when reports will be initiated or stopped. The only instructions to be issued is that forms will be prepared daily, including week-ends, until instructed to stop. Only when a valid, concurrent, seven day period is reported from all yards and locations will the reporting be stopped.

5. COLLECTING OF INFORMATION

Sufficient personnel will be used to insure that information and reports are collected from each point daily, INCLUDING WEEK-ENDS, and be at team headquarters by 1000-1100 each day. A checklist will be kept by each messenger for his route, to insure that all reports are picked up daily. He will check each report for completeness, making sure we have all the information before departing the yard office/ location. Upon arriving back at the work center each messenger will be responsible for filing of the reports in their respective folders. Each yard or location may have several files, Yardmaster's Sheets,

T-1580's, CT-7113's, yard status reports, and other related reports. A file will be maintained for the Puller Reports, and a separate one for the CT-7114's obtained from the time keeper. It will be NECESSARY to check these for completeness, due to late submission of timeslips, there will be omissions in our copies. These will be corrected by an adjustment on the timekeeper's copy, and it will be necessary to get this information and enter it on our copy.

Marketing will make known car documentation requirements to assist in developing car costs. All personnel will assist in this task.

6. EXHIBITS

- I-A DETAILED FUNCTIONS OF YARD ASSIGNMENTS.
- I-B INSTRUCTIONS
- II PULLER WORK SHEET
- III-A RIDERS REPORT OF INDUSTRIAL WORK
- III-B INSTRUCTIONS
- IV SUMMARY OF YARD FUNCTIONS
- V SUMMARY OF PULLER SHEETS, (and Work Sheet)
- VI SUMMARY OF RIDER'S REPORTS
- VII SUGGESTED FORMAT FOR FORM LETTER
- VIII CHART OF FLOW OF TRAFFIC IN TERMINAL
- IX INFORMATION TO BE DEVELOPED BY ADVANCED PARTY:

TERMINAL SWITCHING STUDY
 DETAILED FUNCTIONS OF YARD ASSIGNMENTS

YARD _____ DATE _____ 19__ TRICK _____

JOB NUMBER										
	ENGINE NUMBER/S		ON DUTY		OFF DUTY		FUNCTIONS		HRS CARS	
FUNCTIONS	HRS	CARS	HRS	CARS	HRS	CARS	HRS	CARS	HRS	CARS
CLASSIFICATION/ NBR CARS CLASSED										
INTERCHANGE/ NBR CARS TO/FROM INT.										
MAKE UP INDUSTRIAL PULL										
INDUSTRIAL NBR CARS TO/FROM IND.										
YARD TO YARD (YARD SPECIFIC) NBR CARS HANDLED										
SHOP NBR CARS TO/FROM SHOP										
TCFC RAMP NBR CARS TO/FROM RAMP										
WORK TRAIN										
SPECIAL TERMINALS										
SPECIAL TERMINALS										
OTHER (SPECIFY)										
OTHER (SPECIFY)										
DELAY DURATION (30" OR MORE) CAUSE										
TOTAL										

(USE BACK OF SHEET FOR WORK SHEET, IF NECESSARY)
 REMARKS: (Additional Delays, etc)

YARDMASTER _____ T.M. VERIFY _____

TERMINAL SWITCHING STUDY

EXHIBIT I-B

INSTRUCTIONS IN PREPARING DETAILED FUNCTIONS OF YARD ASSIGNMENT SHEETS BY YARDMASTERS.

PURPOSE: The purpose of the terminal switching study is to develop a cost per car per minute, for each function listed, Therefore it is requested that all entries, time and number of cars, be as accurate as possible. For this report it is permissible to round off all the times to the nearest hour, 29" or less to the lower hour, and 30 or more minutes to the next higher hour.

CLASSIFICATION Time used to make up or break up trains. "Trains" include all road, interchange cuts, industrial cuts, shop cuts, etc. Show number of cars classified by each crew.

INTERCHANGE Total time out of yard used in moving interchange cars from yard listed to the interchange point and return. Show number of cars to and/or from the interchange and indicate the RR interchanged with.

INDUSTRY Total time out of yard serving industries. If an engine makes several moves to industries during his tour of duty show total time involved, also show total cars to and from industries.

YARD TO YARD Time engines used in moving cars from yard listed to another yard and return, show number of cars moved to other yard. If the other yard is not under the jurisdiction of a yardmaster also show the number of cars moved from that yard to yard listed.

SHOPS Show time engine performed work for M of E Dept facilities, these include rip tracks, shops, material tracks, fueling and other locomotive facilities. Show number of cars to and from these facilities.

TOFC RAMPS Time involved in moving cars to and from piggy-back ramps. Show number of cars to and from ramp. (Several functions may be involved in this move see 4 below)

WORK TRAINS Time engine performed any kind of service under the direction of M of W employees. (Switching cripples out of a Work train and spotting on a repair track would be a shop function.)

NOTES

1. Exclude classification time from all other categories. Example Interchange - time starts on departure from yard and ends upon return to yard, last function will end at "Off Duty". Industry pulls sorting their cars in station order will be shown as "Make up Industrial Pull", and not classify.

2. Road/Puller crews. If road crews perform yard type functions listed above, record their time as if yard crews (see 8 below)

3. Delays. Show delays of only 30 or more minutes. Do not include lunch period. This will be included with function engine is engaged in at the time.

4. If a move (other than classification) is made for several purposes, (industrial, interchange, yard to yard) allocate the time to each of the functions performed.

Instructions for preparation of Yard Assignment Sheets(Cont'd)

5. Specific Terminals. Included in the category would be ore docks, coal docks, automobile loading sites, etc.
6. Other Specifics. These include passenger switching, cleanout tracks, hold tracks, grain inspection tracks, rerailling, etc.
7. Engines on duty at another yard will be accounted for from time of arrival at second yard to departure from that yard. (See 2 above)
8. Functions of yard assignments not working under the direction of a yardmaster will be furnished by the trainmaster or his designated representative.
9. Trainmaster will verify each sheet for purposes of the commission.

TERMINAL SWITCHING STUDY

PULLER WORK SHEET

(DO NOT COUNT PULLERS USED TO RELIEVE ROAD TRAINS)
 (INDICATE WHEN CARS ARE DELIVERED TO OR PULLED FROM INTERCHANGES)

DATE 19 DAY

SHEET OF SHEETS

SYMBOL																			SUB-TOTAL (Jobs)	TOTAL (Jobs)
ENGINE NBR/S **																				
TIME ON DUTY																				
ON DUTY POINT																				
ORIGIN YARD																				
CARS HANDLED																				
TIME DEPART																				
DESTINATION YARD																				
TIME ARRIVE																				
MINUTES TRAVEL																				
TOTAL HOURS ON DUTY																				
RELIEVED BY (JOB SYMBOL)																				

** (Indicate number of each unit in consist)

REMARKS:

DELAYS, ETC
 (Indicate Location and Duration)

INSTRUCTIONS FOR ENGINE RIDERS

PURPOSE: To average out the industrial operations in the Terminal certain jobs have been selected by the Marketing Department for observation. Riders will be scheduled to observe these jobs and it is imperative that the job is observed to insure proper coverage of the terminal. Failure to do so may extend the period of the study.

Engine rider personnel will keep the Engine Rider Coordinator aware of their whereabouts at all times, and will get his approval if they absent themselves for an extended period of time or leave the terminal area.

Riders will observe the total time of the crew assignment from on duty to off duty, entering all moves and times on the riders report.

Where several tracks are switched at an industry, the time spent switching each track will be shown, if the work is such that an accurate time is impossible, allocate the time between the several tracks switched.

If an intra-plant switch is performed the time involved in moving this car must be separated from the time switching the track.

When cars are weighed, show the number of cars weighed and reason, ie, Billing, light weighed, etc. If cars are subsequently reweighed, show this and note in the remarks. This is very important.

When it appears the job must be relieved contact the Engine Rider Coordinator for instructions. Do not leave the assignment without his approval. We are studying the job, not the crew.

A copy of each completed 1580 for each industry switched will be turned in with the riding report, also any other written instructions received by the crew. (It may be necessary to make a copy of the 1580 in no reproducing machine is available)

Using the code and minutes columns, the rider will allocate the times to the various functions, and the totals of these times will be entered in the boxes at the bottom of the form upon completion of the assignment.

Engine riders will turn in these reports to the Engine Rider Coordinator IMMEDIATELY after completing their tour of duty.

Notes of the job and maps can be entered on IBM cards and will be attached to the report with the completed T-1580's

Starting time for industry switch will start upon arrival at that industry switch, and completed when leaving that point after switching the industry.

All times will be noted to the nearest minute.

DEFINITION OF SWITCHING STUDY CODES

1. Travel - Running time, outside of yard, to various locations, industries, etc, with or without cars. Any travel time within the yard will be shown as classify.
2. Industry cars placed
3. Industry cars pulled
Set Backs - If only involved in pulling cars show in code "2", if cars pulled and placed, or only placed include in code "3".
4. Classify - All yard work, including;
 - Switching
 - Making up cut
 - Couple track
 - Trim track
 - Switch repair tracks (make special note of this)
5. Delays - Any standing time other than show in Non-Productive work. This would include:
 - Wait instructions, or switch lists
 - Engine failure,
 - Wait for route,
 - Wait for signal,
 - Blocked by other engine or train
 - Service engine.
6. Non-Productive Time
 - Start
 - Lunch
 - Coffee Break
 - Quit
 - Off duty, engine to tie up track.
7. Interchange - From time leaving yard to interchange point and return to yard.
Transfer - From time leaving yard to other yard or set-off point and return to yard.
Weigh cars - Show required information in remarks column.

TERMINAL SWITCHING STUDY

EXHIBIT V

SUMMARY OF PULLER SHEETS

SHEET ___ OF ___ SHEETS

TERMINAL _____ PERIOD _____ 19___ TO _____ 19___

ORIGIN/DESTINATION	OCCURENCES	CARS HANDLED	TOTAL MINUTES	MINUTES PER CAR	AVERAGE TRAVL MIN	REMARKS

NOTE In remarks column show total time pullers engaged in other work.

STARTING POINT _____ TO _____
 (Origin Yard or Pick-up Point) (Destination Yard or Set-Off Point)

DATE								
TIME ON DUTY								
ORIGIN YARD								
SECONDARY YARD								
TIME DEPARTURE								
CARS HANDLED								
INTERMEDIATE YARD								
DESTINATION YARD								
TIME ARRIVAL								
TIME OFF DUTY								
MINUTES MOVE								
MINUTES S/O and/or P/U								
TOTAL MINUTES								

INSTRUCTIONS

- Outbound leg - use total minutes from On Duty to arrival at intermediate or destination yard.
- Intermediate yard - total time from arrival to departure divided by total cars set-off or picked-up, allocate to set off and/or pick-up, add to proper leg of trip.
- Int yard to Dest'n yard - time from departure from Int yard to off duty. If taxied back to on duty point use time one hour after arrival at Dest'n yard.
- Show each leg of trip separately and cars handled at that time. If no set off or pick up enroute allocate time for each leg and show total cars handled for each leg, which would remain constant in this instance.

CONRAIL



EXHIBIT VII:

TERMINAL SWITCHING STUDY

TERMINAL _____

DATE _____

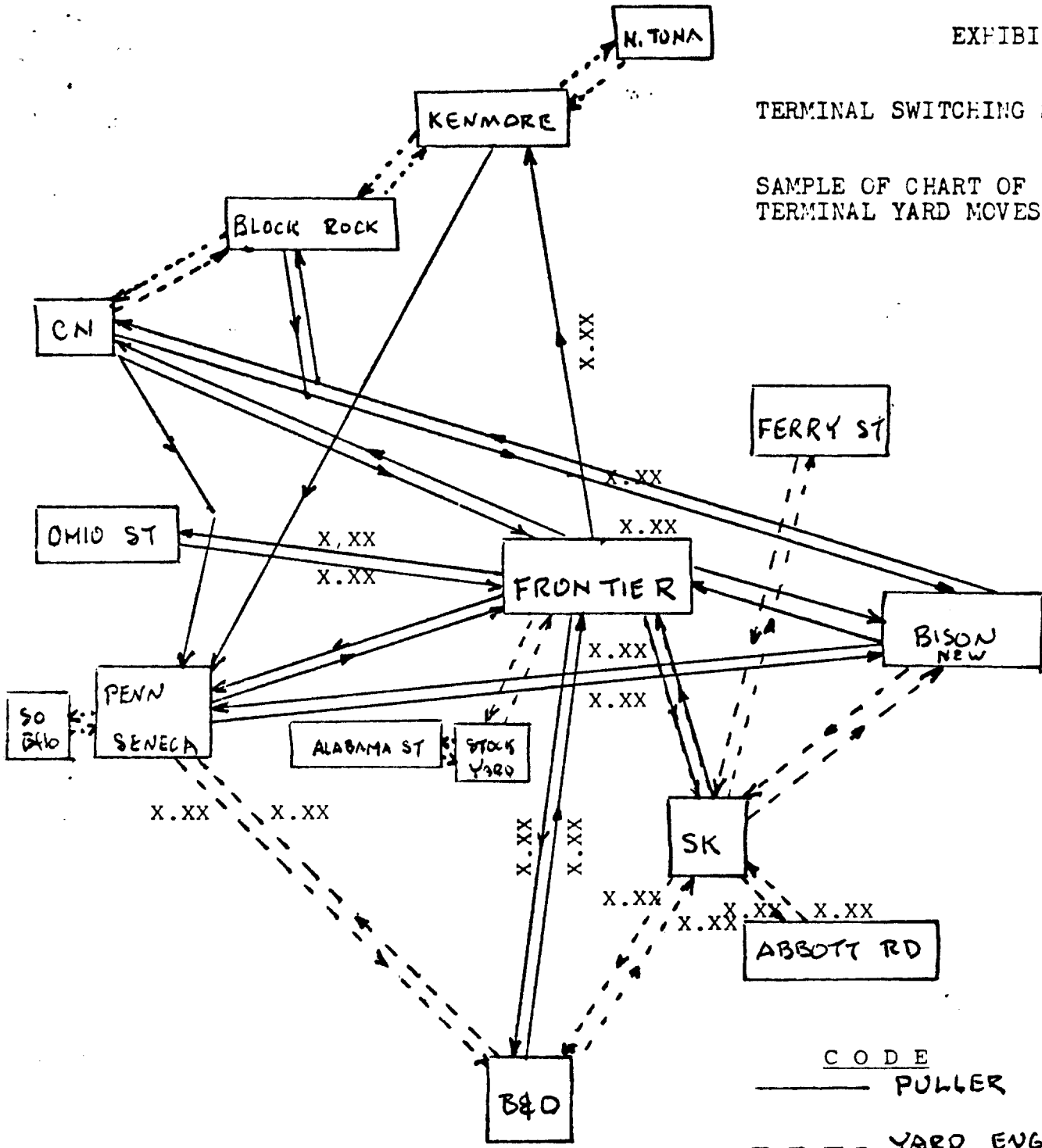
This will introduce _____ who is assisting in a Terminal Switching Study to Adjust Rates for the Service we provide.

He will be allowed to ride any engine in the Terminal. Your cooperation is requested

(Superintendent)

TERMINAL SWITCHING STUDY

SAMPLE OF CHART OF INTRA-TERMINAL YARD MOVES.



CODE
 ——— PULLER
 - - - YARD ENGINE

X.XX Min/Car to be developed.

YARD NAME	
Class	X.XX
Ind a.	X.XX
Ind b.	X.XX
Ind c.	X.XX

SAMPLE OF YARD BLOCK

1. Visit Superintendent of Terminal to be studied and make him aware of the purpose and scope of the study. Also the cooperation that will be needed from the Trainmasters of the various yards. Obtain the services of a local person knowledgeable of all terminal moves and reports for the period of the study, and to assist in gathering the information during the period and the control period.
2. Get map(s) of the area and locate yards thereon, if not already shown. Also indicate the best road routes between the yards.
3. Visit each yard to determine that CT-7113's (Car Dispatched Report), Yardmaster Sheets, Industrial Switch Lists (T-1580) and yard status sheets are available. If the Trainmaster is available, discuss the study with him and obtain a job description of each job in the yard, where it goes, what it does, what industries it switches. Tell him we are aware that the work can change on a moment's notice.
4. A job description should be obtained for each yard and puller job in the terminal.
5. If applicable, how puller moves are controlled and/or documented and where forms are prepared and filed.
6. Determine from the various departments the control period to be used. Usually this is for a corresponding period for the previous year.
7. Determine from ^{the} Marketing Department, specific industries to be studied.
8. Develop a flow chart of the traffic moving between the various yards of the terminal, ^{and} indicate the direction of the moves. (Exhibit VIII)
9. Determine the number of personnel needed to conduct the study. As a minimum needed will be; Coordinator, Rider Coordinator, Engine Riders (number to be determined) Messenger/Evaluator/s (To pick-up and analyze the reports. Additional people as needed to analyze reports.

TERMINAL SWITCHING STUDY

EXHIBIT III-A

RIDERS REPORT OF INDUSTRIAL WORK

YARD _____ JOB _____ ENG NBR _____ DATE _____ 19__ SHEET ___ OF ___ SHEETS

ON DUTY _____ OFFDUTY _____ NBR IN CREW _____ CONDUCTOR _____ RIDER _____

DEPART YARD _____ LOADS _____ EMPTYIES _____

INDUSTRY LOCATION	ARR TIME	PLACED		PULLED		SET-BACKS	DEPT TIME	REMARKS (DELAYS, ETC)	CODE	MIN
		LDS	ETYS	LDS	ETYS					

ARRIVE YARD _____ LOADS _____ EMPTYIES _____

CODES	1		2		3		2 or 3	4		5	6		7
Total Minutes	Travel cars	Min	Placed Cars	Min	Pulled Cars	Min	Set-Back	Classify Cars	Min	Delays	Non-Prod Time	Transfer Interchange Weigh cars.	

September 16, 1981

SUBJECT: Procedures for Indianapolis Crosstown
Switching Study--Starting First Trick
October 5.

1. List of all industries within terminal limits--also IBM cards.
2. Trainmasters, or other operating personnel, to fill out the typical switching minutes at industries and the serving yard per instruction sheet.
3. Assignment list of all yard jobs working.
4. Yard function report to be prepared for each trick at each active yard within the terminal and signed by the yard master and verified by the trainmaster's signature per the instruction sheet.
5. Attach to yard function report all 1580's when industrial work is performed by a switch crew.
6. Copies of the 7113 for each yard showing cars dispatched.
7. Copy of the 7114 for each yard showing crew hours on duty.
8. Copy of interchange reports for time study period.
9. Record of assigned transfers or pullers showing running time between yards and cars handled--possibly this record is obtained by the terminal train dispatcher's records. Yard crews moving cars from one yard to another in transfer work--this record is kept by yard master on yard function report.