LEX**PARK** Parking Audit and Best Practices Assessment

JUNE 2018 | FINAL

Prepared By:

Kimley»Horn

Contents

PROJECT INTRODUCTION

The Lexington and Fayette County Parking Authority (LFCPA) hired Kimley-Horn to conduct a parking program audit and best management practices (BMP) evaluation for the LEX**PARK** Parking Program, which manages on-street and some off-street parking in Downtown Lexington, KY and adjacent residential areas. Project tasks included reviewing current parking practices and defining best management practices for program growth to ensure that the operations have sufficient controls in place and meet industry standards for proper separation of duties. Our team conducted interviews and observation of the control processes; equipment, if applicable; cashiering/cash handling; and daily audit process.

Other tasks included reviewing program data and information, facilitating a multi-day program orientation and review workshop with LEX**PARK** and LFCPA staff, conducting peer reviews of similar programs, and developing recommendations and findings for the LEX**PARK** program. The project team followed standard internal control procedures for this review, such as document review, staff interviews, and on-site inspections of the parking facilities.

The findings and recommendations contained in this report are based on the review results. This report is broken down into the following sections:

1. Project Overview—project methodology and the outcomes of each element
2. Overarching Program Findings—general benchmarks and findings from the program review
3. Peer Review Overview—description of peers contacted and baseline standards
4. Program Review Findings and Recommendations—specific findings and recommendations for each program review element

PROJECT OVERVIEW

The Kimley-Horn team conducted a multi-day program orientation and review workshop with LEX**PARK** and LFCPA staff to help define program effectiveness; conduct the operational audit; and define programmatic goals, visions, and opportunities for the future. This workshop was the primary project element and included interviews with staff and stakeholders, inspection of program assets, and internal work sessions to review information obtained from the interviews and inspections. The project team interviewed staff from various departments within the parking operations individually to gain a better understanding of each person's role and daily tasks. As part of the workshop, the Kimley-Horn team shadowed the operations and management staff during a University of Kentucky basketball game to determine if opportunities existed to optimize event management at off-street parking facilities.

Once the multi-day program orientation and review workshop was completed, the Kimley-Horn team developed a summary of best management practices for the program. The summary also included peer reviews with five similar programs in Chattanooga, TN; Oklahoma City, OK; Lincoln, NE; Omaha, NE; and Louisville, KY. The parking managers from each city was interviewed about parking operations, paid and enforced parking, technology implementation/management, marketing/branding, and program benchmarking. During these one-hour peer review calls, the LEX**PARK** Parking Mangers described how their program operates with outsourced parking operations.

OVERARCHING PROGRAM FINDINGS

This document will provide an in-depth overview of the various components of the parking program. Overall, the program was found to be operating effectively. Since the previous audit (conducted by CHANCE Management), LEX**PARK** has spent significant time and resources to ensure that the foundational elements are in place. This allows LEX**PARK** to more efficiently enhance and expand the program. Part of this effort was to ensure that the technology is being used to get the most out of their system. Several categories were identified as part of the system and operations assessment. This report and the overall program assessment were divided into the following categories.

- Program Operations and Staffing
- Parking Enforcement
- On-Street Parking Operations
- Off-Street Parking Operations
- Special Event Operations
- Residential Parking Permit Programs

The results of this audit showed that most of the program functions fall in the realm of operational efficiencies, the details of which, as they relate to the various categories, are detailed in the following pages.

REVIEW OF PREVIOUS STUDIES AND DATA

Multiple plans and studies have been conducted in recent years that provide recommendations for improving the program. The following summarizes these materials and their findings.

- 2015 LFCPA Ten-Year Parking Analysis. This analysis recommended that parking fines and rates for both on- and off-street parking facilities be increased to balance the system. It also recommended that the zoning code be reviewed and reductions made for the required number of parking spaces.
- CMA Lexington RPP Memo. The memo provided an overview of the RPP program as well as suggestions for improvement. One of the main recommendations was to incorporate the RPP regulations into the primary code of ordinances. This memo also highlighted RPP program benchmarks, which include:
    - Setting permit fees to a rate that covers the cost of administering the program
    - Proposing a fee adjustment while considering issues of cost recovery and customer service
    - Revisiting the two vehicle per household limit and conducting occupancy surveys
    - Exploring options for guest permit availability
    - Exploring the feasibility of the parking meter override feature
    - Converting to a rolling annual permit validity period instead of a fixed validity period
- LPA 2010 Best Practices Ops Audit. This audit revealed many findings for the system, such as:
    - Strong control over single-space meter maintenance and vault keys is lacking
    - Current multi-space meter collection procedures require maintenance staff to directly handle and retrieve bills and coins in the field as opposed to merely exchanging the machines' bill and coin canisters with empty units
    - Commercially-available padlocks are used on collection canisters
    - The meter top and bottom locks are difficult to operate and vault keys have become detached from grip handle

    - Basic physical controls common to the industry are not in the effect to issue, receive, and secure collection canisters
    - Meter supervisor is not included in coin counting activities and there is poor security awareness and practice
    - Single space meter collections are not linked with and reported according to uniquely numbered collection canisters
    - An inefficient manual system is used to record meter outages, repairs, and inventory data, which doesn't permit adequate trend analysis
- 20-Year Restoration Programs for various garages owned by LFCPA. Restorations to the following garages will improve safety and energy savings:
    - Courthouse Garage
    - Helix Garage
    - Victorian Garage
- Lexington Downtown Parking Demand Study. This study was conducted in September 2014 and found that the eastern sections of downtown have enough parking supply, while the central and western portions do not have the supply to meet current or future demands. The project team recommended that further studies on potential development sites for parking structures and financing options for parking structures be explored.
- Data provided by LEX**PARK** to define the benchmarks for the system. This data included:
    - LPA Board Meeting agenda and notes
    - Area boundaries
    - Meter maps
    - RPP maps
    - Monthly reports generated by T2 Flex

Given the above benchmarks, the table on page 4 summarizes LEX**PARK** in more detail. The map on page 7 illustrates the areas where LEX**PARK** manages parking within the Downtown Lexington area.

PEER REVIEW OVERVIEW

The Kimley-Horn team conducted peer reviews with five similar parking programs throughout the Southeast and Midwest, including Chattanooga, TN; Oklahoma City, OK; Lincoln, NE; Omaha, NE; and Louisville, KY. These cities were selected based on their system characteristics and management configurations comparable to the LEX**PARK** program. This helped us establish benchmarking data and best management practices for LEX**PARK** to consider. The information on pages 6-10 summarizes these standards. Other lessons learned and best management practices are discussed throughout the document.

*Table 1 - LEX**PARK** Program Metrics*

Metric		
Total Spaces (On-Street/Off-Street)	***On-Street Spaces*** 1,242	***Off-Street Spaces*** 2,200
Outsourced Operator	REPUBLIC PARKING SYSTEM	
Total In-House Employees/Outsourced Employees	***In-House*** 4	***Outsourced*** 18
Total On-Street Enforcement Staff	7	
On-Street Rates	$1.00/Hour or $0.25 for 15 Minutes	
Parking Enforcement Hours	2 HOUR PARKING MONDAY THRU FRIDAY 8AM TO 5PM	
Program Budget	$3,459,920.00	
Program Revenue	$4,486,800.00	

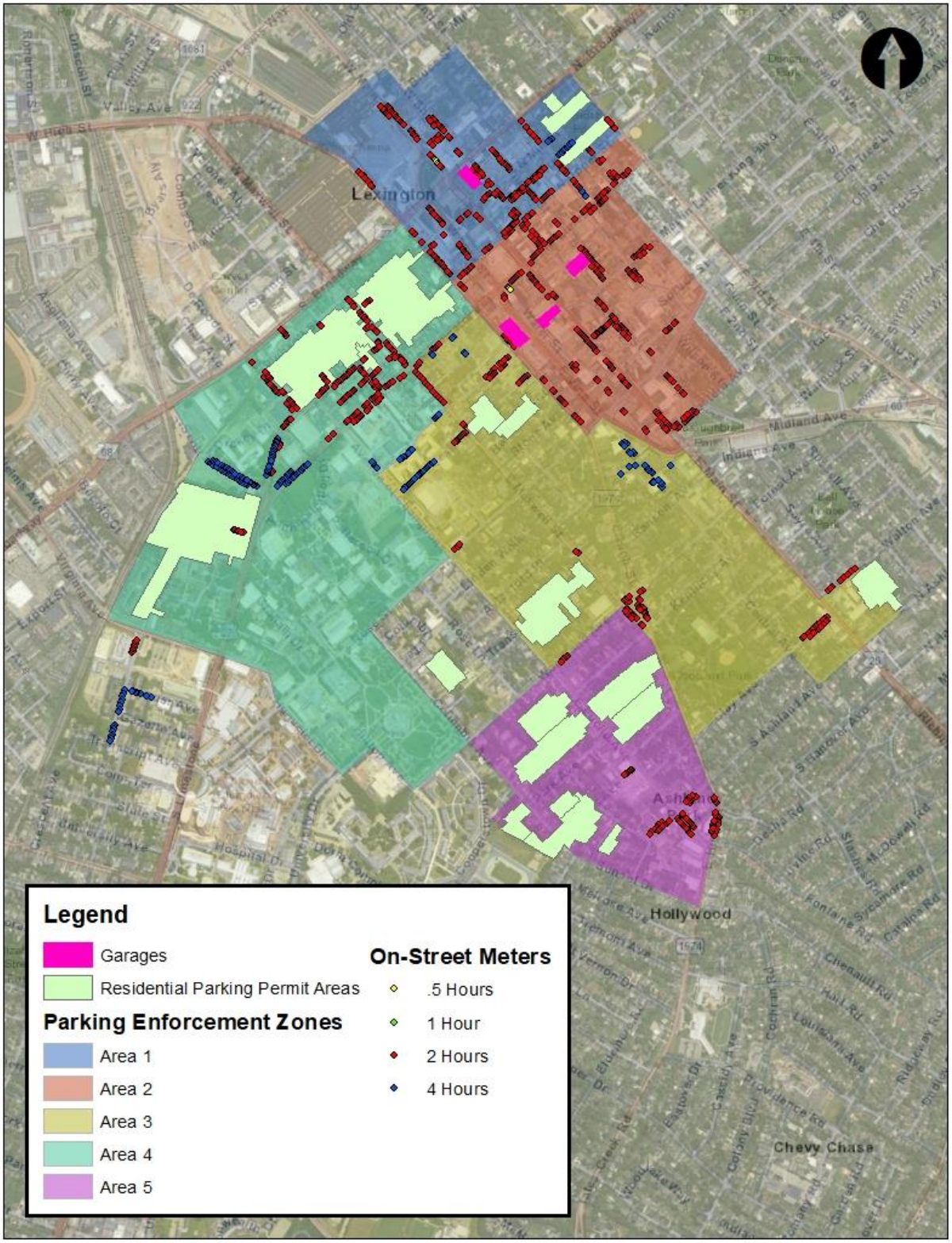


*Figure 1 - LEX**PARK** Parking Areas*

Chattanooga, TN—Chattanooga Parking Authority (CPA)

The Chattanooga Parking Authority (CPA) is a suborganization of the Chattanooga Area Regional Transportation Authority (CARTA). CPA is responsible for all on-street parking operations; however, they outsource their off-street parking operations to Republic Parking of Chattanooga. The table below summarizes their parking program.

Table 2 - Chattanooga Program Metrics

Metric		
Total Spaces (On-Street/Off-Street)	***On-Street Spaces*** 2,100	***Off-Street Spaces*** 2,200
Outsourced Operator		
Total In-House Employees/Outsourced Employees	***In-House*** 1	***Outsourced*** 18
Total On-Street Enforcement Staff	9	
On-Street Rates	$1.00/Hour	
Parking Enforcement Hours		
Program Budget	$2,500,000	
Program Revenue	$2,700,000	

Oklahoma City, OK—Central Oklahoma Transportation Parking Authority (COTPA)

The Central Oklahoma Transportation Parking Authority (COTPA) manages five garages and three surface lots throughout the downtown Oklahoma City area. COTPA had developed a parking and transportation system called EMBARK that operates, maintains, and manages the on-street parking. Operation of the off-street parking facilities, however, is outsourced to Republic Management Services. Below is a table summarizing their parking program.

Table 3 - OKC Program Metrics

Metric		
Total Spaces (On-Street/Off-Street)	***On-Street Spaces*** 1,500	***Off-Street Spaces*** 5,000+
Outsourced Operator		
Total In-House Employees/Outsourced Employees	***In-House*** 4 Management Staff	***Outsourced*** 50+
Total On-Street Enforcement Staff	6	
On-Street Rates	$2.00/Hour	
Parking Enforcement Hours		
Program Budget	$10,461,000.00	
Program Revenue	$8,429,000.00	

Lincoln, NE

The parking program in downtown Lincoln consists of enforced on-street parking meters, 12 off-street parking garages, and two surface lots. While the city maintains and manages the on-street parking meters, they have outsourced their off-street facilities to Republic Management Services. The table below summarizes the parking program.

Table 4 - Lincoln Program Metrics

Metric		
Total Spaces (On-Street/Off-Street)	***On-Street Spaces*** 2,518	***Off-Street Spaces*** 7,900
Outsourced Operator	REPUBLIC PARKING SYSTEM	
Total In-House Employees/Outsourced Employees	***In-House*** 2 Management Staff	***Outsourced*** 116
Total On-Street Enforcement Staff	5	
On-Street Rates	$1.25/Hour	
Parking Enforcement Hours		
Program Budget	$6,500,000.00	
Program Revenue	$13,000,000.00	

Omaha, NE

The Omaha parking program is separated between two divisions, Public Works and Traffic. While the parking program manages and operates the on-street facilities, the city relies on Republic Parking System to manage and maintain the off-street facilities. The table below summarizes the in-house and outsourced parking program.

Table 5 - Omaha Program Metrics

Metric		
Total Spaces (On-Street/Off-Street)	***On-Street Spaces***	***Off-Street Spaces***
	4,900	4,600
Outsourced Operator	REPUBLIC PARKING SYSTEM	
Total In-House Employees/Outsourced Employees	***In-House***	***Outsourced***
	5	45
Total On-Street Enforcement Staff	7	
On-Street Rates	$1.25/Hour	
Parking Enforcement Hours	2 HOUR PARKING MONDAY THRU SATURDAY 9AM TO 9PM	
Program Budget	$3,100,000.00	
Program Revenue	$8,429,000.00	

Louisville, KY—Parking Authority of River City (PARC)

The Parking Authority of River City (PARC) is responsible for managing and maintaining 14 garages, 6 surface lots, and 5,000 spaces of on-street metered parking. PARC is composed of three divisions: Off-Street Parking, On-Street Parking, and Enforcement. They currently outsource both their on-street and off-street operations to SP+, which manages day-to-day activities, including enforcement (i.e., citation issuance, citation collections, appeals).

Table 6 - Louisville Program Metrics

Metric		
Total Spaces (On-Street/Off-Street)	***On-Street Spaces*** 4,500	***Off-Street Spaces*** 11,129
Outsourced Operator		
Total In-House Employees/Outsourced Employees	***In-House*** 20	***Outsourced*** 33
Total On-Street Enforcement Staff	8	
On-Street Rates	$1.75/Hour	
Parking Enforcement Hours		
Program Budget	$20,000,000.00*	
Program Revenue	$22,000,000.00	

**Includes debt service payments*

PROGRAM BENCHMARKING

Using the programmatic data defined in the previous sections, the following table compares the LEX**PARK** program with the peer programs identified in this analysis using benchmarks for staffing, revenue, and budgeting.

Table 7 - Program Benchmarking

	LEX**PARK**	Chattanooga	Oklahoma City	Lincoln	Omaha	Louisville
On-Street Spaces per Enforcement Officer	177	233	250	504	700	563
Off-Street Spaces per Outsourced Employee	122	122	100	68	102	337
Revenue per Space (On-Street/Off-Street)	$1,005	$581	$1,609	$624	$326	$1,280
Revenue per Employee	$157,269	$131,579	$193,722	$55,085	$62,000	$377,358
Budget per Space (On-Street/Off-Street)	$1,304	$628	$1,297	$1,248	$887	$1,408

PROGRAM OPERATIONS AND STAFFING

The LEX**PARK** parking program is managed by a team of internal managers and data analysts, with program operations outsourced to Republic Parking System, a national parking management company. The program began in 2006 and, by 2008, an Executive Director was hired to primarily focus on on-street parking. In 2012, the program added off-street assets, including four parking garages with renovations to be completed in 2018.

The entire program is governed by LFCPA and its Board of Commissioners, an agency with authority provided by the County government to manage the citywide parking program. This authority extends to all aspects of the parking program to manage it as a cohesive system working towards a goal of supporting access to residents, businesses, and visitors. The internal LEX**PARK** management team includes a staff of four that is responsible for planning, budgeting, managing the daily tasks associated with the parking program, and providing input on the operation and successes of the program to the LFCPA Board. The Board, in turn, is responsible for tracking and implementing the vision set forth by the parking authority and responding to the changes that occur within the community.

Day-to-day operations are handled by a team from Republic Parking System that includes a regional manager, a program manager, an off-street manager, and on-street manager. These managers are supported by frontline staff that include parking enforcement ambassadors, customer service, accounting specialists, maintenance technicians, and other service providers. The outsourced management team and in-house management staff work closely to implement the vision of the LFCPA and operate the parking system with a focus on customer service and community enhancement.

This section provides an overview of the overall program operations (primarily at the outsourced level), staffing, customer service, and program management observations.

FIELD OBSERVATIONS

The following are observations obtained while conducting field work during the workshops:

Program Staffing

- There has been considerable turnover in the past few years at the program manager role for the outsourced program. This turnover is likely leading to some inefficiencies in management and operations.
    - Ex. The Senior Manager position with Republic Parking System has turned over, on average, every 2 years. The current Senior Manager had little experience with on-street parking when he arrived.
- The outsourced program team indicated that the salary level and requested experience levels may not be comparable to the expectations of the position.
- A mixture of technology-based and managed-by-feel styles is used. More focus on using data to define the approach to operations and management might yield more efficient results.
- The average tenure of a parking enforcement/parking control officer is about three months. There have been 195 parking ambassadors during the last 10 years, indicating the program lacks retained knowledge and experience.
- It takes four to six weeks after the Republic Parking System background check for someone to get sworn in as an enforcement officer.
- Training is not standardized. Two enforcement officers appear to possess most of the knowledge of how and why duties are performed and knowledge transfer is verbal and on the job.

- Employees are eager to improve job performance but there are limitations in available training.
- The Republic Parking System frontline, accounting, and supervisory staff were very helpful and appear to be committed to doing their jobs the best they can while delivering exceptional customer service.

Program Technology Usage

- Command Center video feed has a 4-minute delay, which essentially leaves the customer service representatives (CSRs) blind when handling a transaction.
- The CSRs tell the customers to "smack the machine" as tokens are not falling through as they should.
- Running out of tokens was an issue for customer service and cash control. Anyone exiting that did not receive a token at the entrance and did not have cash were allowed to exit free of charge.

PERSONNEL INTERVIEWS

The ***Senior Manager*** demonstrates significant parking knowledge, as one would expect from a person in his position. He stated that he had limited knowledge of the Scheidt & Bachman (S&B) system and primarily left the on-street program to the Operations Manager. This aligns with his statement that he had no experience managing on-street parking when he started this position in 2016. His greatest challenges with the program are as follows:

- Hiring and keeping a qualified off-street manager. Although the current manager, hired in November, is doing well, Kimley-Horn recommends verifying that Republic Parking System enroll him in their manager training program.
- Shortage of staff during the daytime hours to respond to S&B equipment issues. He finds himself being directly involved with these issues daily for fear of diminished customer service. Remedying the S&B service will most likely solve this issue.
- A camera system in need of repair or replacement.
- A need for a true auditor position to oversee a variety of tasks, from counting money to individually auditing tickets. The current operating procedures call for the managers to do all the audits and to use dual verification when pulling or counting money (i.e., two managers/supervisors must be present). The senior manager thought his time would be of better use to the program spent elsewhere, such as on recruitment, managing employees, and planning.

The ***Office Manager*** is quite knowledgeable and has good systems in place. She seemed to lack complete confidence in her ability to do the job, largely due to the person that trained her never returning from medical leave. She too needs to understand the full capabilities of each of the systems to ensure she is receiving and reviewing the correct reports. She is very organized and seems to have a good working relationship with the managers (both outsourced and in-house). The additional financial oversight provided by the LEX**PARK** executive team provides allows for a higher level of review than the Republic Parking System corporate accounting department alone can give.

The ***Operations Manager*** has been with the LEX**PARK** program since 2008 and possesses a breadth of institutional knowledge. It appears he relies heavily on the On-Street Field Supervisor to handle most technology related tasks. The challenges he continues to encounter include:

- Senior Manager attrition rate. The program is on its sixth Senior Manager this has prevented the team from gaining traction as a program.

- Fleet of vehicles in need of replacement and do not meet the needs of the program. Based on his concern, the Kimley-Horn team inspected the vehicles and recommend adding a pickup truck with a lift gate for coin collections. The team further determined that the GEM electric vehicle is not safe to operate on rainy or foggy days due to difficulty seeing through the plastic enclosure.
- Complications associated with using three types of on-street meters. His recommendation is to switch to multi-space meters.
- His desire to learn more about the S&B system. We recommend requesting that S&B offer training classes for software and hardware that select Republic Parking System staff can attend. This is a very common practice at their regional offices.

The ***Off-Street Manager*** came on board in November 2017. He had no previous parking experience; however, he appears strong in the areas of customer service and employee relations. We heard from two separate hourly employees that they appreciate the level of respect he shows all employees. We strongly encourage Republic Parking System to enroll him in their manager training program or an equivalent, such as the Certified Parking Professional program offered by the National Parking Association. The one major challenge he mentioned involved the S&B system and the length of time it takes to get parts.

The ***On-Street Field Supervisor*** appears to be a hard-working individual committed to the success of the program and displays a professional demeanor. He seemed very content with program operations and did not offer any response when asked about challenges. It is evident that he is very well respected by the employees he oversees. We observed him processing deposits for all on-street parking and determined he had an effective process in place and was very deliberate in his efforts to follow the procedures recommended by Chance Management. His process of counting the revenue from the T2 multi-space meters was exceptional and gave no opportunity for report deviation or theft.

The ***On-Street Meter Collections*** has been with the program for more than a year and is hoping to return back to school soon. As such, he appreciates the flexibility this job provides him. He was efficient when completing the route despite equipment issues he encountered along the way. We did notice that, on the first few meters, he did not use the IPS Meters collection card. We asked him about it and he said he forget it and immediately returned to the office to get it. While following him along a complete route of his on-street collections, we were able to determine some of the challenges he encounters on a daily basis, including:

- Multiple problems with the collection vault and getting the coin canisters to match up so coins can drop in the vault. The vaults appeared old and in need of replacement.
- GEM car not appropriate to use during collections. He must lift it into the back of the car.
- Difficulty seeing when driving the GEM car in inclement weather.

The ***Command Center Staff*** impressed us with their customer service interactions, whether by phone, in person, or via the intercom. We spent two hours observing the command center and customer service staff in action during the latter part of a busy morning. Each employee appears to have an understanding of where the ongoing challenges are and can quickly assist customers in need. During the project team's time with them, we learned that the video they view is delayed by nearly four minutes. This can be particularly challenging as the video will not match up with conversations taking place. Correcting this issue will improve customer service and provide video that can be reviewed in attempts to resolve disputes or for training purposes.

STAKEHOLDER OUTREACH AND FEEDBACK

The following are comments received during stakeholder interviews related to the programs overall operations and performance:

- The board authorized bonuses for Republic Parking System staff in 2017 but isn't sure if they were ever given to employees.
- The current budget can cover the cost of program maintenance; however, in the next 10 years, LEX**PARK** wishes to build a garage and money needs to be put towards this investment now.
- The outsourced organization potentially needs a data analyst/technology expert who can manage and more efficiently utilize technology.
- Marketing and education campaigns are handled through local marketing firms. There needs to be improved communication with regards to directing people where to park and when patrons must pay for parking.
- A branding process is currently taking place. This includes website development, which would ideally provide a robust downtown parking component. The current program budget is $60,000 annually.
- There is an issue with staff turnover due to the non-competitive salary.
- A downtown parking partnership (such as the one in Indianapolis) should be considered for surface lots, where private lots that meet certain appearance and security criteria can be promoted on the Downtown organization website.
- The board should be informed of more than liability and revenue issues. This would help them understand the important operational and management aspects.
- To increase occupancies at night within the downtown area, LEX**PARK** should consider promoting free parking at night, perhaps the first hour when parked off-street.

LESSONS FROM PEERS

- The **Chattanooga Parking Authority (CPA)** has experienced turnover mainly in ambassador positions as opposed to management level positions. CPA Management level positions start at a $62,000 annual salary (with the approval of City Council) plus benefits and retirement, which likely has an impact on the retention of management staff.
- Since they renewed their 5-year contract in August 2017, **EMBARK**, with Central Oklahoma Transportation Parking Authority, has had a positive experience with Republic Parking System. In addition to off-street parking operations, Republic Parking System is responsible for budgeting salaries, with oversight from EMBARK. EMBARK has not experienced significant turnover during the past few years. Management level salaries range from $40,000 for mid-level managers to $90,000 for the general manager. The parking director felt this was a contributing factor for the low turnover rate. He also felt another contributing factor was the training aspect of their program. The program provides internal mentorship and ongoing staff education opportunities, which creates invested ownership and a desire to grow within the program.
- The **Lincoln, NE** Parking Program has not experienced turnover in the management level but are experiencing it for frontline and entry level positions. The City of Lincoln currently has the lowest unemployment rate in the country (less than 2%). They have found it difficult to recruit outside of the city and attempt to employ and retain individuals that are "home grown." To help with this issue, the City and Republic Parking System have tried to implement a "path to promotion" that can be utilized as a key selling point during interviews. Current salaries for management level positions range from $44,000 for the on-street manager to $92,000 for the general manager . Each position also receives a $3,000 bonus.

RECOMMENDATIONS

The Kimley-Horn team developed the following recommendations related to program operations and staffing based on the findings from the stakeholder outreach, field observations, personnel interviews, and best management practices review.

STAFFING AND TRANSITION

- The LFCPA Board should consider working with the parking operator to define higher salaries for program managers to be more competitive in the market and attempt to control transition at the management level positions.
    - We have provided some peer benchmarking conducted during the peer review in the previous section that indicates that the range of managerial salaries for each program.
    - LEX**PARK** could also consider additional benchmarking through the International Parking Institute (IPI) and other industry organizations to identify salary ranges and dictate that to the parking operator.
    - The LFCPA board should emphasize expanded benefits and other performance-related measures to support growth and satisfaction within the job and hopefully mitigate staff turnover experienced in recent years.
    - LEX**PARK** and the LFCPA board should also consider defining specific experience levels and training requirements for management level employees if they want future hires to meet the expectations on the job.
- LFCPA and LEX**PARK** should consider an additional operations management position that focuses on technology integration, maintenance, and data mining. This position's primary functions would be management of existing and future technology investments and coordination with vendors to improve performance and usage of the program's investments. A sample job description is provided in Appendix A.
    - One example of current technology is License Plate Recognition to perform multiple functions beyond scofflaw enforcement. More detail is provided below in the technology section of the report.
    - The Regional and Program Managers for the outsourced program elements should be part of advanced data mining and program planning through the enhanced use of technology.
    - We recommend that the Republic Parking System Regional Manager carefully review the capabilities of each back-office software system currently in place to ensure the responsible manager has the necessary knowledge to access and review revenue reports. This is especially important due to historic turnover at the Senior Manager position.
    - Investment in more technology (e.g., additional LPR for expanded enforcement in residential areas not in downtown) could free up some staff/salary for the technology manager role.
    - Ideally, this person would work closely with both the executive staff from LEX**PARK** and the outsourced operator. This person likely needs to be housed with the outsourced operator to have optimal access to the operations and management technologies and software. Given this, they would likely be best served as a member of the outsourced operations team.
- There should be more emphasis on growth opportunities for frontline staff with potential supervisory level positions available for team members that have held the frontline position for several years and performed well.
    - This may help alleviate some potential loss of historical program knowledge, specifically related to in-the-field performance and training information.

- The parking operator should also create training manuals tailored to the LEX**PARK** program to help capture some of this historical program knowledge.
- LEX**PARK** and the outsourced operator could also consider providing a transitional education programs that allows employees to move between on-street and off-street duties. This would allow them to learn more about the program while avoiding burnout. This could occur early in the hiring process (e.g., in the background check period) and then periodically as staffing allows.

- LFCPA should better define or have input in outsourced management budgets and have quarterly check-ins with staff to gauge job satisfaction. The intended benefit of this will reduce turnover and improve efficiency.
- LFCPA should define clear reporting mechanisms for the operator. This will be discussed more in the technology section below but a better set of data points is required to drive decision making on a day-to-day basis.

TECHNOLOGY INTEGRATION AND MAINTENANCE

LEX**PARK** and the LFCPA have done an excellent job of collecting and implementing high-end technology systems that provide better customer service. However, they are likely not being used to their fullest extent currently. A few key examples of this include:

- LPR could be utilized for virtual permitting in parking facilities and neighborhood parking areas. It could also be used to conduct occupancy counts. Genetec has the ability in the back-end to perform both functions without much additional development or integration from the current back-end platform.
  - For occupancy measurements, the Genetec back end can designate zones that register license plate reads (counts) against known spaces within the zone to approximate occupancy counts. This could be in the enforcement zone, at the neighborhood level, or even on a block by block basis. The LEX**PARK** data analyst and the proposed outsourced technology manager should be able to define these zones and create them within the back-end.
  - This review of occupancy over time will provide one more piece of data for the LEX**PARK** data analyst and the management staff to use to make better decisions about paid and unpaid parking areas.
  - LEX**PARK** can also attempt to do manual counts with raw LPR reads using license plate information, latitude/longitude outputs, and read timestamps. This method is less efficient and requires a fair amount of data scrubbing and GIS mapping to correlate the output data. If LEX**PARK** can use Genetec back-end systems, the process will be much more efficient for occupancy analysis.

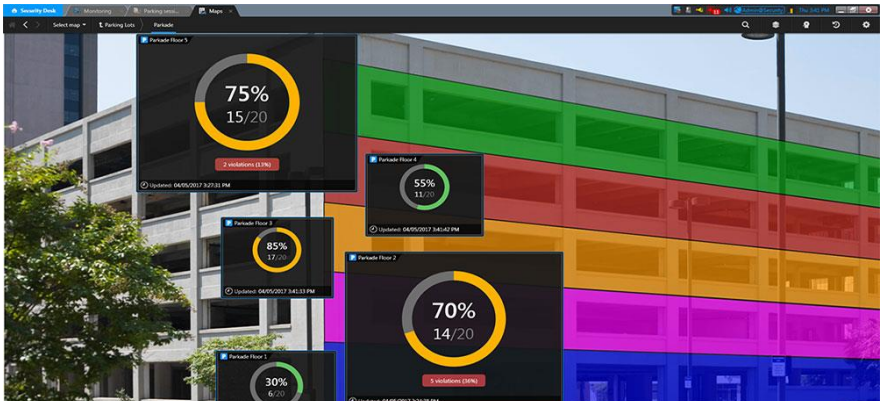


Figure 2 - LPR Occupancy Portal from Genetec

    - The IPS back-end system should be utilized to perform better back-end data analyses. The current data analyst for the LEX**PARK** program utilizes this data to the best of his ability, but some coordination with IPS support should allow for better data access and use to make data-driven decisions about the program.
    - The LEX**PARK** management staff could consider a back-end integration platform (e.g., Smarking) but should be sure that there is an opportunity to help define customized reporting and dashboards to ensure that the data aggregated is meaningful.
- Technology maintenance should be the responsibility of the outsourced operator and specifically their new technology manager. This would allow for more seamless review and interaction with the vendor, since the outsourced operator will likely have more day-to-day interaction with the technology. The peer review indicated that placing the responsibility of maintenance (and management of maintenance agreements) with the operator was the consensus of the majority of peers.
- LEX**PARK** and the outsourced operator should clearly define reporting and data analysis protocols to help drive better and more efficient management of parking. This would include establishing day-to-day metrics on collections, enforcement, and customer support that allow for flexible program management. This could include:
    - Redefining routes and zones for on-street operations more frequently.
    - Setting thresholds for transactions with the S&B equipment before replacing tokens to limit the times they run out during daily interactions.

CUSTOMER SERVICE

The LEX**PARK** website is well organized and has most features needed to support efficient customer interaction. A few things to consider:

- Add an off-street permit management portal that would allow patrons to pay for permits, manage permit profiles, and limit unnecessary interactions.
- Add a residential permit management portal that would allow patrons to pay for permits, manage permit profiles, and limit unnecessary interactions. This will be especially important if LEX**PARK** ever migrates to a virtual residential permit.
- Provide better availability and location mapping (i.e., garage, LPR, meter-based data). The data appears available today but LEX**PARK** should check the accuracy and consistency. If the data is inaccurate, limit the information to rates and space counts.
- Review and revise marketing and education materials as needed.
- LEX**PARK** should consider implementing graduated parking fines and/or more opportunities for warnings/education that would limit negative experiences of first-time offenders. The graduated fine would more heavily fine habitual offenders to dissuade patterns of excessive parking offenses.

MARKETING AND BRANDING

The following section outlines a few key marketing and communication strategies that LEX**PARK** should consider in the future:

- LEX**PARK** has previously developed marketing materials through a variety of methods, including print, video, and visual media. Combined with the theming and program branding campaigns, this approach has served the program well and helped to educate users about various program elements (meter feeding, garage parking, new technologies, etc.

- Given night and weekend revenue impacts (likely from TNC and mode changes), the next round of marketing should focus on creating demand for non-peak parking conditions. This should include a combination of targeted marketing and incentive based programs.
- Examples include:
    - Using a combination of print and audio media to capture drivers in the “act of parking”, which could include ingress/egress from parking facilities and commute trips into the Downtown Lexington area.
    - Many of the peer communities utilize radio advertising to capture drivers during commute periods. These radio spots are intended to be informational and educate patrons about deals and available parking during non-peak conditions.
        - The City of Toronto had an effective radio campaign with its Green P program and could provide some examples of catchy and informative radio spots.
    - If LEX**PARK** chooses to use print media, it should be light on text and use graphics and direct messaging to inform patrons of program elements. The figures below (one from previous LEX**PARK** efforts and one from Boise, ID) provide good examples of clear, concise, and direct messaging.
    - LEX**PARK** should also consider using deals and special offers to entice patrons into underutilized facilities during non-peak conditions. This could include free time (e.g. a first hour free), discounted rates, or promotions for longer term parking.

Figure 3 - Marketing Poster Examples

- ***Considerations for Social Media***—the most successful parking programs and organizations using social media are creative in their messaging and approach and use the site not just for information, but for contests and other fun interactions. Social media gives the brand a personable and down to earth accessibility that is appealing to users, making them more likely to continuously engage.

DATA ANALYTICS AND MAPPING

- The LEX**PARK** program should continue to invest staff effort and time in the development of GIS mapping and databases that can be used for deeper analysis of parking operations.
- The program should consider using back-end data related to occupancy, transactions, enforcement, and collections to support a more data-driven approach to parking management.
- The data analyst on the in-house team should work closely with the technology manager proposed for the outsourced program to cultivate this data.

PARKING ENFORCEMENT

Parking enforcement is handled by the outsourced parking operator, primarily in on-street parking areas (both metered and non-metered). There are currently five parking enforcement zones, with three in the Downtown Lexington area and two more adjacent to the University of Kentucky (primarily with residential permit parking). The on-street meters are enforced Monday through Friday from 8am to 5pm. The enforcement team has one LPR vehicle, which is primarily being used for scofflaw enforcement.

FIELD OBSERVATIONS

The following are observations obtained while conducting field work during the workshops:

- The Downtown parking enforcement zones appear to be appropriately sized to support parking turnover through effective citation issuance.
    - Zones 4 and 5 maybe too large to cover on foot. Staff indicated that these areas took three to five hours to complete.
- LPR equipment is not being utilized to the extent possible. Currently, it performs scofflaw enforcement throughout the city, but could be better utilized to offset some enforcement activities in the larger enforcement zones around the University of Kentucky.
- LPR equipment is missing 10-15% of parked vehicles based on anecdotal information.
- The LPR also failed to register plates from two lanes over, which should be possible with the equipment setup.
- There appeared to be sporadic equipment issues with enforcement handhelds losing location or losing connection with the printer, which prevented enforcement staff from completing citations in a timely fashion.
- Staff indicated that there was an expectation to write four to five tickets per hour, which felt to them like a quota. The program managers should minimize quotas or targets and focus on program compliance and customer service.
- Currently, enforcement training is all verbal, in-the-field knowledge transfer and includes no manuals or protocols. Training to use the LPR equipment is handled through one- to two-day, ride along sessions.
    - Staff does the training for enforcement and there are no written procedures. The longest tenured staff carry the knowledge.
- Luke multispace meters can be observed by LPR but are not tied into the pay by phone system.

STAKEHOLDER OUTREACH AND FEEDBACK

The following are comments received during stakeholder interviews:

- Parking ambassadors face issues with public perception but they are doing well to help improve the customer experience.
- For business owners, parking ambassadors have been great about responding to problems and helping promote efficient use of the street.
- LEX**PARK** should explore opportunities to define more levels and roles to support growth in the enforcement staff.
- Enforcement routes are not determined by the number of meters. They are determined according to what can be covered within an hour and in six rounds throughout the day.
- LEX**PARK** recently added their seventh ambassador. It typically takes four to six weeks to get someone sworn in.

- Enforcement staff route times are typically from 7:30am-4:00pm, 8:00am-4:30pm, or 8:30-5:00pm, and are rotated every 30 days.
- Consider a combined effort between LEX**PARK** and Downtown Merchants to promote a "Parking Angels Program," ticket forgiveness to promote better access into downtown.
- Consider having Republic Parking System cross train with Downtown Lexington Partnership (DLP) to invest in roles as ambassadors.

LESSONS FROM PEERS

The **Chattanooga Parking Authority (CPA)** currently enforces parking Monday through Saturday from 8am to 6pm, with the exception of the Northshore area, which is enforced Monday through Saturday 9:30am to 6pm. This is due to most businesses in the Northshore area not opening until later in the day, typically 10am. CPA made the enforcement time change back in October 2015; and surrounding businesses initially pushed back with the enforcement changes; however, once they saw the increase in parking turnover adjacent to their businesses, they became more supportive.

EMBARK currently enforces on-street parking Monday through Friday from 8am to 6pm. They do not enforce on weekends and this strategy appears effective. The program has implemented LPR enforcement for on-street. They currently are working to obtain a year's worth of data so they can expand the footprint of on-street paid parking and determine rate increases.

The **Lincoln, NE Parking Program** enforces on-street parking Monday through Saturday from 8am to 6pm and off-street parking Monday through Saturday from 8am to 2am. The on-street parking has a citywide rate of $1.25 per hour for short-term parking. This rate was increased in 2016 from $1.00 per hour. They also have long-term parking (i.e., five to ten-hour limits) for $0.75 per hour. When introducing the on-street rate adjustment, the city considered it to be a one-time adjustment and not something long term. However, once they looked at the future cost for garages and demonstrated to city leadership and the mayor that these types of incremental adjustments will allow the program to become more profitable, they anticipate it to be the first of four adjustments during the next 12 years. The City of Lincoln also enforces their on-street parking using LPR technology. They are currently using a Genetec system that focuses on the area around the State Capitol, which is very congested due to the hourly meter limits. Currently, they are utilizing the citation data with the LPR to develop a heat map to show the most impacted streets and try to identify the individual vehicles that cause issues. They utilize a GIS analyst, shared with other departments, to communicate programmatic impacts, including occupancy, transaction, and citation heat mapping.

Louisville, KY's Parking Authority of River City (PARC) has implemented paid and enforced parking throughout the downtown area. The enforcement hours for on-street parking are Monday through Saturday from 7am to 6pm. Weekend enforcement was introduced in 2014. They have always charged for Saturday parking; however, individuals refused to pay because there was no enforcement disincentive. When Saturday enforcement was introduced in 2014, they began with a soft rollout during the first 9 months. They gave citations after the third month for those who continued to illegally park. Louisville has also recently implemented LPR technology. They recently have upgraded their system to Genetec equipment using PCS Mobile software. PARC is mainly using the technology for enforcement to help with booting and the RPP program they have in the Old Louisville area.

RECOMMENDATIONS

The Kimley-Horn team developed the following recommendations related to parking enforcement based on the findings from the stakeholder outreach, field observations, personnel interviews, and best management practices review.

- The Downtown Lexington parking enforcement zones (Zones 1-3) seem to have good coverage and are working well. There are 177 spaces per enforcement officer. When compared with peer metrics, these zones are lower than the performance benchmarks defined from those groups.
- The areas outside of Downtown, near the University, are larger and staff indicated that these areas only have one or two revolutions per shift, which may not be an effective way to manage the areas.
    - These areas might be better served by more LPR-based coverage, especially if the residential permits could be converted to virtual permits.
    - Using LPR more in these areas would also provide a more thorough depiction of occupancy in the residential areas, which could help validate the need for RPP coverage.
        - As mentioned previously in the technology recommendations, the current Genetec back-end setup allows for zones that can be used to define occupancy.
- These outside zones should also be considered for seasonal adjustments. During summer periods, demand slows around the University, which may render some of the enforcement efforts less impactful. The program managers should consider reducing the coverage areas when there is not sufficient demand to justify full enforcement. This should be accomplished through evaluating occupancy and citation issuance trends in these areas.
- The outsourced and in-house program managers should use more data-driven metrics to make decisions about operations (e.g., enforcement routing, planning, and application). Today, those decisions are made based on desired coverage area and not on effectiveness of coverage.
    - This will require increased use of the back-end T2 system to identify how and where citations are being issued as well as supportive information about parking occupancy and the overall needs of each area.
    - The back-end system should allow for citation reporting by enforcement zone.
    - LEX**PARK** could also use meter numbers to pair citation information with meter data in GIS to develop heat mapping for the zones. This will help identify trends. The following illustrates heat mapping by total tickets issued by block in the City of Lincoln.

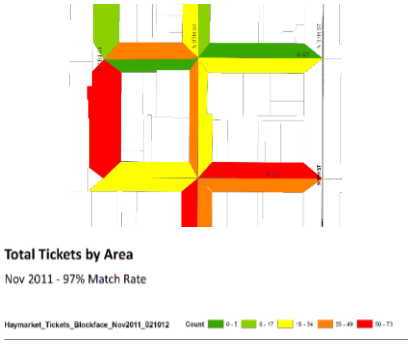


Figure 4 - Example GIS Mapping (Lincoln, NE)

    - Using this data, the management team should consider applying customized enforcement routing and practices in each zone to help manage citation issuance and

promote compliance with parking regulations. In other words, each zone could have a customized enforcement approach.

- As mentioned in the program operations recommendations, LEX**PARK** should consider graduated fines and first citation warnings to educate first-time offenders and help promote enforcement officers as helpful community ambassadors. During the last decade, many communities throughout the U.S. have implemented graduated fine structures to minimize negative impacts of an incident involving a single misparked car. Heavier citation levels are reserved to alter the behavior of habitual offenders.

The table below provides examples of how the LEX**PARK** citation levels could be modified to support a graduated fine structure. Per our recommendation, some first citations should be converted to warnings to help educate patrons on compliance. Notice that some citation types are for safety violations and should not be given as warnings. For example, parking in front of a fire hydrant or red curb should be ticketed upon initial infraction.

*Table 8 - Example Graduated Parking Citation Approach for LEX**PARK***

Citation Type	Existing Penalty	First Offense	Second Offense*	Third Offense*	Fourth or more offenses*
30 min. zone	$15	Warning	$15	$30	$45
1 hour zone	$15	Warning	$15	$30	$45
2 hour zone	$15	Warning	$15	$30	$45
4 hour zone	$15	Warning	$15	$30	$45
Over 24 hours	$15	Warning	$15	$30	$45
OT – unlimited	$15	Warning	$15	$30	$45
Non-coin placed in meter	$40	Warning	$40	$80	$120
Meter violation	$15	Warning	$15	$30	$45
Loading zone	$30	Warning	$30	$60	$90
Double parking	$35	Warning	$35	$70	$105
Not parallel to curb	$35	Warning	$35	$70	$105
In bus zone or taxi cab stand	$30	Warning	$30	$60	$90
Facing wrong direction	$20	Warning	$20	$40	$60

Citation Type	Existing Penalty	First Offense	Second Offense*	Third Offense*	Fourth or more offenses*
Within 20 feet of crosswalk	$35	Warning	$35	$70	$105
In fire lane	$50	$50	$100	$150	$200
Parking on sidewalk or curb	$35	$35	$70	$105	$140
Truck in residential area	$20	Warning	$20	$40	$80
Parking prohibited by signs	$35	Warning	$35	$70	$105
Parked within intersection	$35	$35	$70	$105	$140
Within 15 feet of fire hydrant	$100	$100	$200	$300	$400
Blocking driveway	$35	$35	$70	$105	$140
In crosswalk	$35	$35	$70	$105	$140
Blocking alley	$35	$35	$70	$105	$140
Yellow curb	$35	$35	$70	$105	$140
In space designated for government employee	$35	Warning	$35	$70	$105
Other	$35	Warning	$35	$70	$105
Not parked within marked space	$15	Warning	$15	$30	$45
On the planting strip/median	$30	$30	$60	$90	$120
Within 20 feet of fire station	$100	$100	$200	$300	$400
Within 30 feet of STOP sign	$35	$35	$70	$105	$140

Citation Type	Existing Penalty	First Offense	Second Offense*	Third Offense*	Fourth or more offenses*
Street sweeping	$15	Warning	$15	$30	$45
Over 12 inches from curb	$35	Warning	$35	$70	$105
Parking obstructing traffic	$35	$35	$70	$105	$140
RPP violation	$20	Warning	$20	$40	$60
Handicap parking violation	$250	$250	$500	$750	$1,000

ON-STREET PARKING OPERATIONS

LEX**PARK** currently has a total of 1,188 on-street metered parking spaces over the five enforcement areas. On-street meters are primarily priced at $1.00 per hour. The time limits vary from 30 minutes to four hours, depending on the location. There are six 30-minute spaces, 968 two-hour spaces, and 181 four-hour spaces. There are 1,313 non-metered permit restricted spaces as well. The metered spaces currently have four types of revenue control technology: IPS single space meters, Luke 2 pay stations (configured in pay-by-plate mode), PayByPhone mobile payments, and older coin-operated POM meters.

FIELD OBSERVATIONS

The following are observations obtained while conducting field work during the workshops:

Operations and Management

- Numerous on-street areas had no meters or signs present; however, vehicles were still parking along the curb.
- Enforcement hours were not displayed along the streets, resulting in customers having to park and walk to the meter to know the rates/enforcement hours.
- Several meters do not meet Americans with Disabilities Act (ADA) height guidelines (>36”). No actual measurements were taken, but from visual inspection, several appeared to be more than a foot higher than guidelines allow. We recommend a thorough inventory to confirm.
- West Jefferson (Restaurant Row area) is congested and the City and LEX**PARK** are still working to find tenable solutions.
- After review of the Chance Management Report for the on-street operations, we observed that the vast majority of recommendations were implemented and are currently being used.

Figure 5 - On-Street Parking Equipment

Collections

- Based on observed processes, there is a chance of revenue loss within the on-street program and, specifically, the single spaces meters. We have outlined the areas of concern in addition to other observations/recommendations.
    - The IPS meters’ back office system is not being used to its fullest capabilities, including to track and verify meter collections. Routes should be established within the reporting system and the collections attendant should use the collection card at every meter. Reports were not being produced from the IPS system to verify coin collections. A solid system is in place to control the movements and openings of the cash collection vaults.
    - The multi-space meter collections process and cash verification system in place includes proper reporting and separation of duties.
    - Upon inspecting the IPS back office system, there appears to be no collection routes set up within the system.

Figure 6 - Broken Key in Collections Equipment

    - The collections card for the IPS meters is not being used in a consistent manner.
    - The collections vault is old and difficult to use, resulting in potential down time or slowed collections.
    - Collections from POM meters were combined with IPS meters; therefore, collections reports from IPS are unusable.
    - The count room is small and inadequate for storage of counted coin. We witnessed processed coin bags being stored on the floor of the count room and noted that access to the count room is limited to only necessary personnel.
- GEM car is not effective for coin collections loading and off-loading.

STAKEHOLDER OUTREACH AND FEEDBACK

The following are comments received during stakeholder interviews and public workshops:

Operations and Management

- There needs to be better utilization of existing equipment for day-to-day operations.
- Expansion planning for on-street should include using data-driven decision making to consider location and policy changes.
- Continue to evaluate how to manage changing dynamics along the curb.
- Rate and occupancy heat maps are being developed to determine where to increase rates.
- On-street rate decrease in the south end of downtown didn't increase the occupancy of those spaces.

Collections

- Staff training is needed on IPS back office system.
- Collection routes could be reviewed for efficiency and cash control.
- Replace POM meters with IPS meters.

RECOMMENDATIONS

The team developed the following recommendations related to on-street parking management based on findings from the stakeholder outreach, field observations, personnel interviews, and best management practices review.

Operations and Management

- LEX**PARK** should consider replacing some or all of the outdated POM meters with IPS single space meters. The decision on where to replace these meters should be based on occupancy observations and demands so that meter technology is implemented where it is most needed. Replaced POM meters could be re-introduced in areas of moderate demand where there are no meters today or could simply be retired.
- There likely needs to be some evaluation of rate adjustments over time. The current on-street rate is applied citywide but there may be a need for higher rates in higher demand areas. The LEX**PARK** data analyst is currently evaluating occupancy and transaction trends to define if there are areas that exhibit a need for variable rates.
    - LEX**PARK** is $0.25 to $1.00 lower per hour than most of the other peers surveyed for this analysis.
    - We recommend that, if LEX**PARK** intends to move to a variable pricing environmental and any level of council approval is required for on-street rate increases, a maximum and

minimum rate (i.e., ceiling and floor) should be set to give the management team the latitude to change rates within that ceiling and floor.

- Hours of enforcement and paid parking should also be considered for expansion. This could include creating zones where there is high nighttime activity and expanding enforcement hours to 8pm. Consider evaluating Saturday as a payment required day or charging premium on-street rates around the Rupp Arena during events.
    - This could also mean starting enforcement hours later to meet the need of adjacent businesses (e.g., if businesses don't begin to see demands until 10am start enforcement hours then instead of at 8am).
- A complete inventory of all curb spaces assets should be performed to identify opportunities for future meters or additional residential parking permit areas.
- LEX**PARK** should develop a sticker, to be placed on the back side of the meter, that displays enforcement hours and rates .
- Wayfinding signage needs to be larger and communicated better to inform customers what is private vs. public parking.
- LEX**PARK** should consider adding meters in the West Jefferson area.

Figure 7 - Example Decal (Tempe, AZ)

Collections

- Set up the collections routes in the IPS back office system so that LEX**PARK** can better track revenue, and more specifically collections, by route. Once this process is complete, a collections summary report can be printed following each collection to match actual coins collected. Once these routes are identified by pole number (locally by LEX**PARK** staff), IPS will set this up.
- The POM meters should be collected separately and not combined with the IPS meters. This will allow the revenue from the IPS meters to be fully reconciled. We recommend replacing the POM meters with IPS meters so that revenue is fully tracked and reconciled.
- LEX**PARK** should coordinate with a local bank to determine if direct cash deposits can be made using revenue printouts as deposit slips. This will negate the need for a larger count room and remove unnecessary revenue handling by RPS staff.
    - Furthermore, revenue canisters could be delivered directly to the bank or picked up by LEX**PARK**'s armored car service. This process is becoming popular throughout the country now that most systems are automated and produce printouts detailing the currency/coin amounts to be deposited.
- The potential expansion or relocation of the count room should be considered for safer and more efficient work conditions.
- Although the collections from and balancing of the Lukes were more than adequate, we included the following recommended guidelines for reference:
    1. Collections
        - Log out keys from money counting room and use close-out card (if applicable)
        - Complete procedures to obtain the close-out report on the given machine
        - Remove money from all reservoirs. Secure money in a sealed bank bag
        - If applicable, download all files to a USB Drive

- Immediately upload files per instructions upon returning to the office
- Upload the Bad Card File
- Secure the machine

2. Balancing
    - Set up all reports generated from the machine to be automatically emailed to the Manager, Senior Manager, Auditor, and DCR after they are sent to the hosting company (if applicable).
    - Fill out a deposit slip based on equipment readouts and put revenue in a sealed bank bag for deposit.
        i. This step is only needed if the bank will not take the canisters directly. We do not recommend recounting the money; instead, allow the bank to verify the amounts.

As a rule, we recommend that all keys for the machines be marked "Do Not Duplicate". The company that makes keys for LEX**PARK** should be required to have the Director's approval to duplicate any keys.

- Perform a random count each month to verify the accuracy of the bank counters.
    - Input data daily into the DCR, Quickbooks, or applicable product, including credit card transactions. Many financial institutions will not credit any transactions disputed if not caught within two to three days.

OFF-STREET PARKING OPERATIONS

LEX**PARK** owns three garages in downtown Lexington and manages a fourth, Lexington Fayette Urban County Government (LFUCG) owned garage with more than 2,200 spaces. The four facilities include the Helix, Victorian Square, Transit Center, and the Courthouse garages. All four garages have existing rates of $1.00 per 30-minutes, $10.00 max, $3.00 flat rate Monday-Friday after 5pm, and $3.00 flat rate per day on Saturday and Sunday. Depending on the garage, monthly rates are available and range from $60 to $90 per month. The off-street parking uses a S&B revenue control system with tokens instead of typical paper tickets. The parking facilities are managed by the outsourced parking management company.

FIELD OBSERVATIONS

The following are observations obtained while conducting field work during the workshop:

Operations and Management

- Stakeholders would consider making the garages more attractive and integrated with the community (i.e., Helix Garage).
- The increase of TNC use has likely attributed to the downturn in evening and weekend revenues in garages. Revenue during the weekdays has not declined.
- The S&B PARCS system for the entire off-street enterprise has and continues to experience significant down time while waiting for replacement parts. It is also apparent that the technician assigned to the market is not readily available, as he is shared with the Louisville Airport. During interviews with staff, the Kimley-Horn team learned that, in some cases, they have waited for more than a year for some parts.

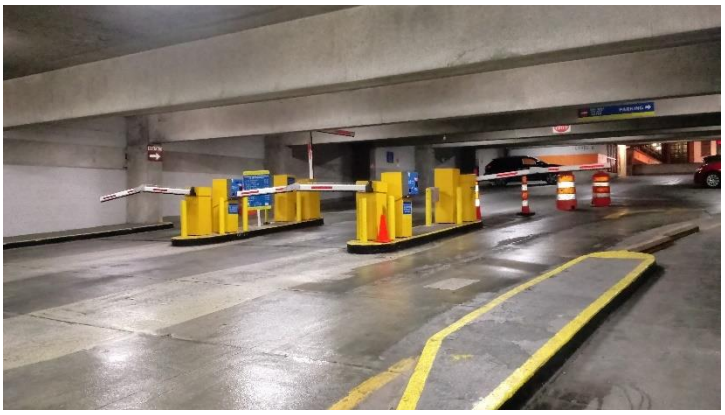


Figure 8 - PARCS Equipment (Victorian Square Garage)

- Many components of the PARCS system were missing or not functioning (i.e., lane intercoms and credit card processing readers):
    - Three of the four pay-on-foot meters at the Transit Center were not collecting cash
    - Transit Center: The intercom at the right exit to High Street has not worked correctly for two years
    - Transit Center: The credit card reader at the left exit lane to High Street has been down for more than two months
- The camera/DVR system has a four-minute lag from the garages to the command center and is not properly secured in the office.
- However, apart from the camera lag time, the command center is set up correctly and functions as intended.
- Currently, there are no options available for monthly parkers to activate, manage, or pay for parking online.
- The S&B PARCS system uses chip coins (tokens) in place of the standard mag-stripe or barcoded tickets. On multiple occasions, the Kimley-Horn team witnessed the entry lane devices running out of the chip coins. This proved problematic and resulted in revenue loss. The process typically unfolds as follows:

    - When the devices have no coins to distribute, parkers entering a garage are greeted with a message that the entry device is out of chip coins and are instructed to press the intercom button to speak with the command center. The staff logs the customer's name and entry time and then raises the gate.
    - Upon exiting, the customer must press the intercom button again to inform the command center that they did not receive a chip coin at entry. The staff checks the records to validate the customer's entry time and then quotes the fee for parking.
    - If the customer has cash, he/she drops it in the courtesy box and the gate raises. If the customer only has a credit card, there is currently no way to send that charge to the gate and the customer is allowed to exit free of charge.
- Although LEX**PARK** has access to the S&B Intervo Analytics package, we saw no evidence of the report package being used. An example of this report is included in Appendix B.
- Current technology has the capability of running reports for before and after 5pm and LEX**PARK** should begin using this technology immediately.

Collections

- The collections, counting, and verification process for balancing the POF machines is well documented. However, the separation of duties policy is not being fully observed during the counting and reconciliation process.
    - On one occasion, the Facility Manager counted the money after he and the Senior Manager picked up the cash canisters. The cash was not collected using locked exchangeable vaults. Rather, it was dumped from the vault into a deposit bag.
- We reviewed the process of collecting and balancing the pay-on-foot stations and found it satisfactory. This process is currently conducted weekly and collected cash only reported weekly. We have outlined a recommended process below that will enhance the controls from satisfactory to outstanding.
- The count room is inadequately sized and lacks storage. Further, the DVR/camera system is not secured in a locked cabinet.

As with any operation, the organization should strive to implement the least amount of touch points to cash when possible. Occupational fraud can account for as much as a 6% loss of annual revenue each year. To combat this potential fraud, LEX**PARK** should implement proper controls, from the purchasing of tickets, to monthly parking credentials and validations, and through to the final reporting. In many small organizations, adequate separation of duties needed to meet these controls is not in place. To maintain the personnel costs, the organization must use technology to fill gaps in separation of duties procedure.

Maintenance of Facilities

- Most off-street facilities appeared dark and shadowed, even with lighting upgrades.
- Many untreated oil spots were observed throughout the garages.

- Conditions of the parking facilities are as follows:
    - Court House Garage
        - Facility was free of litter; however, many oil spots existed
    - Transit Center Garage
        - Many standing water puddles were present
        - Many dark spots were noticed throughout the facility
        - Exhaust fan cages were not effectively identified with a safety sign/color. In addition to yellow safety tape or paint, we recommend posting signs that reads Do Not Back In.

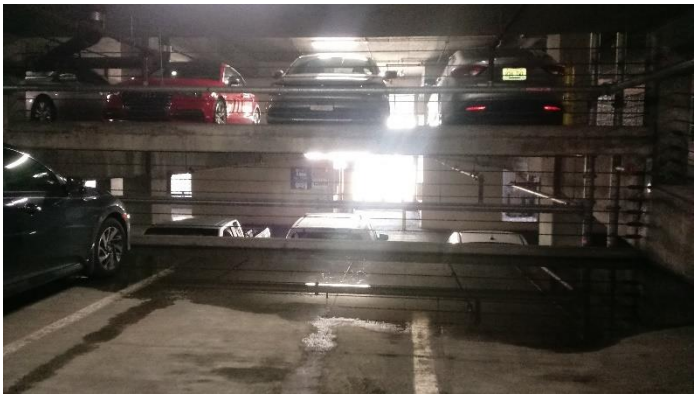


Figure 9 - Standing Water in Transit Center Garage

        - Transients were observed in areas surrounding the garage and in the facility during early morning hours
        - High Street exit lane intercom is not operational
        - High Street middle lane credit card reader is not operational
    - Helix Garage
        - Aesthetic amenities were noted, such as the painting scheme in stairwell and elevator areas
        - Dark areas were noted throughout the facility
        - Several areas featured incomplete or sloppy painting, especially around the ramps where concrete sealant had been applied
    - Victorian Square Garage
        - Dark areas were noted throughout the facility
        - Signs with white paper taped over Monthly Parking Available section were present
        - Painting scheme in stairwell and elevator areas were noted, but some paint had run after completion

STAKEHOLDER OUTREACH AND FEEDBACK

The following are comments received during stakeholder interviews and public workshops:

- LEX**PARK** should standardize the maintenance and token system and integrate better protocols for replacing tokens to avoid revenue loss.
- LEX**PARK** needs a better and more customer friendly permit management system.
- The cash collection procedures need slight adjustments.
- LEX**PARK** should address visibility and panhandler concerns, as these issues can impact the safety of the facilities.
- Restaurant and bar owners feel that customers prefer not to park in the garages because the technology is cumbersome and confusing. Commercial and hotel business owners are also of this opinion.
- LEX**PARK** does not manage or operate any surface lots but stakeholders voiced concerns about panhandlers and slow/confusing technology present at these lots. We have noted it here since these issues could impact the success of the overall system.
- Overall, system wayfinding could be improved. While electronic data is communicated well, signs should designate public versus private facilities. LEX**PARK** should also consider updating signs to more clearly communicate rate information.

RECOMMENDATIONS

The Kimley-Horn team developed the following recommendations related to off-street parking management based on findings from stakeholder outreach, field observations, personnel interviews, and the best management practices review:

- Revenue control equipment should be backed weekly to ensure data preservation in the event of a catastrophic occurrence.
- We recommend LEX**PARK** staff perform an audit to determine chip coin usage versus inventory at each facility. Entry devices should be regularly stocked to meet usage demands and prevent them from completely running out of coins.
- We recommend a complete review of the S&B Analytics Reporting package purchased as part of LEX**PARK**'s software upgrade. Many of these reports can be automated to provide LEX**PARK** staff a wealth of data to make more informed business decisions. We recommend coordinating this effort with the regional S&B contact.
- We also recommend a complete review of the S&B maintenance agreement. Based on communications with operators across the country, other markets are not experiencing a substantial delay when receiving parts.
- We recommend having a qualified security camera vendor inspect the camera and DVR system. We witnessed a lag in video transfer time while onsite that was later refuted by LEX**PARK** staff. This discrepancy could be due to recent repairs or simply intermittent malfunctions in the system.
- We recommend exploring options for selling monthly parking online and allowing customers to manage their accounts online. LEX**PARK** could consider a PARIS online option or investigate T2's options. Another option is NuPark, which can also handle the enforcement and citation management/collections.
- We recommend exploring options for enhanced wayfinding within the system, including:
    - Providing real-time information from the garages on the LEX**PARK** website
    - Pushing real-time and static information from the off-street parking garages to mobile applications, primarily navigation apps like GoogleMaps, Waze, and Apple Maps. Partnering with online software providers, such as ParkMe, can accomplish this
    - Considering simplifying messaging on the signs (e.g., have them read "Open" instead of displaying available space counts or convert to a number after the available spaces falls below a certain threshold)
- In response to stakeholder feedback regarding parking garage messaging and rate information, LEX**PARK** should consider:
    - Using a simplified rate board system convey the primary information the patron needs—when they can park and how much it will cost. The example on the next page was developed by Todd Pierce and Pictoform for SFPark to simplify rate boards that were littered with quarter hour payment increments, early bird specials, and other information that is not pertinent to the average user
    - Incorporating electronic signage that alternates between daytime and nighttime configurations and pricing schemes

Figure 10 - Example of Simplified DMS Messaging

Figure 11 - Example Signage Options (Simplified Rate Board)

Figure 12 - Example Signage Options (Digital Rate Board)

- We understand that LEX**PARK** has invested significant funds in maintaining and improving conditions in the garages, especially as it pertains to PARCS systems, lighting, and even theme lighting on the outside of one of the facilities.
    - We recommend additional lighting and painting in darker areas with security concerns.
    - Standing water is a concern and was witnessed in several areas of the Transit Center Garage. The Kimley-Horn team recommends having an engineer examine this issue to determine if additional drains or channeling of water will help. Standing water, especially in conjunction with road salt usage, will create larger problems later.
    - We understand LEX**PARK** is currently developing an ongoing maintenance plan that schedules tasks, such as PARCS preventative maintenance, pressure washing, mechanical sweeping, and touch-up painting.
    - Some guidance for parking garage maintenance planning are found in Appendix C.

We recommend the following processes be employed at LEX**PARK** garages to balance the pay-on-foot machines and audit monthly parking accounts:

Automated Locations (i.e., no cashiers):

- Current Transient Process at Garages:
    - Step 1 – Pay On Foot/Pay In Lane:
        - Many of these machines are only emptied of cash once a week. The reports are used to record the revenue amount.
        - Revenue is separated from the change fund only if the change fund is replenished in the machine. If the machine does not give change, then all is reported as revenue.
    - Step 2:
        - Cash collected is taken to the office for counting in the money counting room.
        - A deposit is prepared for delivery by the armored car service.

        - Information is reported directly to the accounting system for reconciliation and client reporting.
- Issues/Recommendations:
    - Change fund audits are performed weekly for pay-on-foot and pay-in-lane equipment.
    - Machines are only emptied once a week based on cash volume.
    - Although the pay-on-foot and pay-in-lane machines are not often used for cash transactions, the reports should be printed daily. Most equipment can either email reports daily to designated personnel or have them print automatically each evening. This information should include the parking fee breakdown, the daily lane, daily summary reports, etc.
- Recommended Process:
    - Step 1 – Change Fund:
        - The facility manager should be issued a change fund that he/she signs for via an A/P check. This amount will appear on the general ledger and should be randomly checked once a month at a minimum.
        - Since many machines only allow input of the change fund amount, it is vital that change fund audits be performed on a regular basis.
        - The manager/supervisor should add to the change fund either by completely replenishing the canister or by manually replenishing the machine. The Kimley-Horn team recommends completely replenishing the box so that it always starts with a fixed amount.
    - Step 2:
        - There should be two sets of keys to the automated pay stations.
        - One set should be used for maintenance only and have no access to revenue.
        - The second set should open the note boxes and coin hoppers.
        - These keys should be locked in a key box and a log should be kept showing when they were removed for use.
        - There should be designated personnel (e.g., manager/supervisors) that can use these keys to remove and replenish the note boxes and coin hoppers.
        - Two people should be present when the note boxes and coin hoppers are removed.
    - Step 3:
        - To open the door, personnel should insert their pass card into the POF for system recognition.
        - Many machines require a PIN to confirm a user's identity before he/she can access the computer functions.
        - Cards should not be shared and personnel with access should each be issued a distinct card.
        - Most machines print out a report as part of the note removal process.
    - Step 4:
        - The note box should be taken to the money counting room or directly to the bank if possible.
        - The report should be used to separate the change fund from the revenue prior to deposit and should be compared to the server-generated report to ensure no cash/coins have dropped between the machine and server.
    - Step 5:
        - This revenue information should be entered in the general ledger by the person responsible for keying into the DCR/Geneva or similar product.
        - Although the machine is not emptied every day, reporting should occur in the DCR/Geneva or similar product daily. This is important as credit cards clear daily even though the cash is not removed. This process of reporting would easily identify any issues with lost connections or potential transaction buffering.

        - Geneva, Intervo Analytics, or similar product should produce ticket and revenue summaries that provide a automatic feed to the general ledger so that the backup data matches the client report.
    - Step 6:
        - The daily cash report should be verified against the bank deposits and the credit card settlement reports daily.
        - The reconciliation should be performed daily so that any credit card issues or bank shortages can be dealt with in a timely manner.
        - If there are credit card outages, the facility manager should be informed so that he/she can address any potential equipment issues.
    - Step 7:
        - Client report should be produced.

Monthly Parking

- Recommended Process
    - Step 1:
        - Access cards received from the company providing the cards should be logged as inventory.
        - Financial manager or designee should have complete control of the cards but should provide a small inventory (i.e., less than 15) of cards to the Facility Manager.
        - The manager should sign cards out from the log.
    - Step 2:
        - New customers should fill out the required form to gain access to a specific location. The form should cover the rules and regulations of the facility.
        - Each location should have a policy for lost and forgotten cards and access to the garage.
        - Each location should have a policy for late fees if applicable.
        - Each location should have a policy on the company's notification responsibilities for rate changes.
        - Contract should be signed by each customer stating he/she understands the charges for each aspect of the operation.
        - The issued card number, official start date, and the appropriate charge rate should be placed on the contract form.
        - The information should be recorded in the PARIS system and the manager notified to activate the card on the official start date.
        - All individual customers should be required to pay by the 1st of the month and no later than the 5th.
        - Cards should be "locked" for individuals if bill is not paid in full by the 5th of the month.
        - Twice a month, the card audit should be performed by both the accountant and manager. This provides dual authentication that each is following proper procedures for billing and card access.
        - The manger should have "Read Only" access to PARIS.

***** Notes**: With the newer equipment, we recommend that the facilities work with PARIS to integrate the PARIS system with the revenue control equipment. This would require a customer to be registered in billing before his/her card is activated. This would allow automatic "lock-out" for non-paying customers.

SPECIAL EVENT OPERATIONS

Special events present a unique challenge for parking systems as the typical demands and parking behaviors are displaced in event areas and typical operations and management strategies are replaced by those tailored for demand influx and egress. For LEX**PARK**, there are several event types that create this shift in off-street management strategy. As part of the workshop, the Kimley-Horn team observed event demands at the Victorian Square garage during a University of Kentucky event at Rupp Arena. The observations and recommendations in this section are based on those obtained during this event but can be considered systemwide event management recommendations.

FIELD OBSERVATIONS

The following are observations obtained while conducting field work during the workshops:

- Standard policies and procedures are not clearly defined and set for cash pulls during events.
- Inefficiencies exist with the number of available spaces, sign display, and admittance of customers into the Victorian Square Deck, including a delay on the number of available spaces displayed on the exterior parking guidance signage. Some of this was due to alternative parking configurations where staff created spaces in crossover points in the garage.
- Cash control method observations:
    - Open cash trays were stored on stool in a very unsecure manner.
    - Cashier needed to leave area where money was being held to remove cones for Spot Hero VIP spaces.
    - Manger had to act as cashier while Senior Manager was onsite at the garage.
    - Issues arose when S&B equipment would not accept tokens during egress.
- Traffic flow observations:
    - Inflow was dispersed fairly evenly and was not a problem.
    - Queuing prior to the game included only a few cars and was usually associated with payment or scanning pre-payment receipts.
    - After the game, queuing was much more extensive, with a large line to the roof.
    - Some of this back up had to do with the circulation pattern, where closed crossovers required patrons to drive up to the roof before driving back down.
    - Queuing at the exit was largely due to two lanes merging after the exit gates and before the single lane exit point.

Figure 13 - Dynamic Signage During Event Conditions

STAKEHOLDER OUTREACH AND FEEDBACK

The following are comments received during stakeholder interviews:

- Spot Hero Information cards should be provided to direct people to alternate parking locations when the deck fills. A map or other information about parking alternatives also could be provided.
- Operations to facilitate exiting westbound on Main Street should be a priority to improve heavy right turn operations out of garage.
- Using both lanes (entry and exit) could improve this issue.
- Parking staff should be available after the event to help with traffic control out of the garage.

- Enforcement staff should be available for violations and turnover during special events
- LEX**PARK** should consider using on-street paid parking during events.
- LEX**PARK** should consider ways to prevent customers traveling to downtown, but not attending special events, from having to pay special event prices.

RECOMMENDATIONS

We developed the following recommendations related to event parking management based on the findings from stakeholder outreach, field observations, personnel interviews, and the best management practices review.

- The cashier assigned to the entry lane should have an apron with pockets or a locked cash box with him/her.
- Instead of blocking the Spot Hero spaces off with cones, we recommend identifying the area better with paint and additional signage so the cashier can simply direct the customer to a particular space instead of having to leave from their post to move a cone.
- Although Spot Hero is a good addition, we recommend adding Park Whiz as their sales and marketing are tied more directly to secondary ticket firm Stub Hub. This should add even more online sales due to the popularity of University of Kentucky Basketball.
- The credit card in/out is a fast and easy way to move event patrons. Additional signage and employees can better promote this option versus cash.
- We recommend using the entrance lane temporarily at the conclusion of events to speed the egress process. Using both lanes with some level of traffic control (even a parking staff member) would help to quickly empty the parking facility.
- The parking guidance signage outside of the garage should potentially be turned off during event operations to minimize conflicting information as spaces are reallocated and/or redefined within the garage.
- LEX**PARK** and LFCPA should consider options for expanding on-street parking paid hours and pushing enforcement to later in the evening on event days to help manage use of the spaces near the event. This report does not include specific examples of areas where rates and/or enforcement times should be extended but the general recommendations are as follows:
    - Opportunities for rate extension exist around the Rupp Arena on event days and evenings. This area has competing interests for long-term (i.e., event) and short-term (i.e., restaurant/retail) parking that could be better managed by enhanced on-street parking.
    - The IPS meters would allow LEX**PARK** to temporarily price short-term events and extend hours requiring payment. LEX**PARK** will need to make sure local codes/ordinances allow extended meter hours without government approval.
    - An example of this would be to increase the hourly rate to $3 during events with a four-hour maximum. Event rates today are $15 to $20 to park in a garage while the adjacent on-street spaces are free. By extending hours requiring payment during events, LEX**PARK** can reserve more convenient and short-term parking to businesses that may need it for non-event goers.
    - Setting up zones in the IPS system will allow LEX**PARK** to track revenue, demand, and peak occupancy by zone, helping move operations toward demand-based pricing to address areas of high demand and promote areas that have little to no demand.

RESIDENTIAL PARKING PERMIT PROGRAMS

The LEX**PARK** managed Residential Parking Permit (RPP) Program includes 41 unique districts and affects 1,176 properties and 1,313 parking spaces throughout the city. The Lexington-Fayette Urban County Council approved the RPP Program in April 1990 to address the negative impacts neighborhoods were experiencing with non-resident vehicles utilizing local streets for parking throughout the day. There are more than 20 different enforcement times throughout the five areas, ranging from partial days, to full days, to seasonal and off-peak conditions. These times are petitioned by the neighborhoods to meet their specific needs. LEX**PARK** sells approximately 2,000 permits each year and approximately 1,000 of these are full-time permits and the other 1,000 are for visitors. Each purchased permit is $10 and for $40, each resident is entitled to two full-time and two visitor permits each year.

FIELD OBSERVATIONS

The following are observations obtained while conducting field work during the workshops:

- In the two largest zones, enforcement is handled on foot.
- On most days, no more than two revolutions are made in these areas. There is some use of LPR to identify scofflaw vehicles in the area, but not for enforcement support.
- RPP holders have hard-copy stickers to denote permanent permits. Visitor passes are hanging tags.
- Most residential streets exhibited high occupancies.

Figure 14 - Residential Permit Parking Signage

STAKEHOLDER OUTREACH AND FEEDBACK

The following are comments received during stakeholder interviews:

- The visitor permits are sold for one year even though the ordinance states they are valid for only 90 days. Visitor permit use is lacking enforcement.
- Virtual permitting is desired; however, 50% of the plates would likely be expired when transitions took place, resulting in complications with LPR enforcement and visitor use since visitors are not tied to a license plate under the current system. This would have to be addressed before moving to an online system.
- There is a concern that homeowners would object to a virtual system, especially with the need to register guest plates.
- Service vehicles and homeowners that have clientele (e.g., piano teachers) would need quick access to visitor permits.
- There is a proposal to increase the permit rate from $10 to $20 per year and the fine from $20 to $30.
- Weekend enforcement to capture and dissuade improper parking in neighborhoods is erratic.

RECOMMENDATIONS

The following recommendations related to residential permit parking management were developed based on the findings from stakeholder outreach, field observations, personnel interviews, and the best management practices review.

- The consultant team feels strongly that a move (even partial) to virtual permitting will help with the management and application of neighborhood parking area operations moving forward.
- While some of the limitations described in the stakeholder responses are valid, there are options to overcome them.
- Service vehicles could register for daytime use permits that would allow them to park in residential areas for service calls, removing the onus from the homeowner to provide valid credentials. This daytime use permit would be universal and allow them access to all neighborhoods for service call purposes.
- Business owners could have their clients pre-register vehicles using a smartphone application, or could do it themselves once the client parked.
- Homeowners could do the same with visitors.
- Citations could also be virtual or mailed to the offender. This would remove the need to stop the LPR vehicle and write tickets.
- Virtual permitting would remove the need to have an enforcement officer in each area walking the zones. Rather, one to two LPRs could cover the areas several times per day.
- A slow and voluntary rollout could be used to help alleviate the homeowner concerns regarding virtual permitting. During this rollout, LEX**PARK** staff could offer to register vehicles and assist homeowners with guest permitting.
- LEX**PARK** should also consider consolidating the number of permit area types, specifically the time regulations and enforcement times. This may make it easier to enforce and manage as well as remove conflicting signage that could cause patron confusion and frustration.

APPENDIX A – EXAMPLE TECHNOLOGY MANAGER JOB DESCRIPTION

Job Summary

Under the direction of the LEX**PARK** Executive Staff, the technology manager implements, maintains, data mines, troubleshoots, and resolves hardware and software issues related to parking technology systems. This individual responds to service requests from LEX**PARK** staff, implements technology integration strategies, extracts and analyzes data and customized reports from parking technology systems, and provides instruction and training to systems users.

Duties and Responsibilities

- Provides frontline technical support and answers service calls from LEX**PARK** staff to troubleshoot and support specialized software applications and associated hardware systems.
- Ensures proper functioning and integration of current and future parking hardware and software systems (e.g., License Plate Recognition [LPR] technology , payment by cell phone software, on-street parking meters, back-end management technology solutions, etc.)
- Assists LEX**PARK** in various parking technology projects, including software and database management, system upgrades, and hardware/software updates
- Takes a lead role in project management to ensure seamless integration with existing system and software throughout the process of identifying, evaluating, and implementing future technology projects
- Assists LEX**PARK** in determining data system needs, coordinates with I.T. department, consultants, vendors, and staff to develop and implement plans to address those needs
- Works with I.T. staff, consultants, vendors, and staff to effectively and efficiently utilize the computer and network systems within LEX**PARK**
- Trains staff in operation of specialized parking data processing equipment, systems, and software
- Coordinates with LEX**PARK** data analyst to create specialized analysis and geospatial comparisons of parking data from various parking back-end software platforms
- Develops and maintains various reporting functions and makes recommendations to team leaders regarding budgeting needs, personnel, system capacity, system improvement planning, seasonal service changes, and route planning
- Programs destination signage system and performs updates and software downloads. Develops and maintains web applications for LEX**PARK**
- Demonstrates continuous effort to improve operations, decrease turnaround times, streamline processes, and work cooperatively and jointly to provide quality, seamless customer service
- Installs, configures, and performs routine maintenance on systems hardware and software, including servers and operating systems. Creates and maintains user accounts
- Participates in research of current and emerging computing technologies
- Assists in recommending products and participates in project implementation for LEX**PARK**
- Performs other duties as assigned or directed

Knowledge, Skills, and Abilities

- Ability to establish and maintain effective working relationships with employees, other divisions, and the public
- Ability to communicate effectively, both orally and in writing
- Knowledge of computer hardware maintenance on component level

- Knowledge of computer word processing, spreadsheets, databases, and e-mail (i.e., Microsoft Office, Outlook, Excel, Access)
- Hardware and software systems, including [INSERT LEX**PARK** SOFTWARE PLATFORMS HERE]
- Knowledge of network communications hardware, software, and protocols
- Ability to learn new applications
- Ability to understand and effectively convey technical information to end users in simple terms
- Ability to analyze problems and implement or coordinate appropriate solutions
- Knowledge of computer operations and the application of data processing equipment
- Familiar with PCI Compliance
- Successful completion of background check

Education and/or Experience

Required:

- Associates degree from an accredited college or university or demonstrated equivalent in formal education and/or experience
- Two years PC/network repair or support experience (may substitute one year of education for each year of experience)
- Supplemental advanced work in data processing, including networking and PC hardware
- Computer literacy in Microsoft Office software

Preferred:

- Extensive application support experience
- Bachelor degree in computer science or related field
- Public-sector experience

APPENDIX B – EXAMPLE INTERVO REPORT

Report Package

P A

Functional Description

Parking and leisure centre systems
Breite Straße 132
41238 Mönchengladbach
www.scheidt-bachmann.com
Subject to change

86 XXXXX (4Q)

SCHEIDT&BACHMANN

Author:
Deborah D. Wilson (S&B USA)
Frank Foelz (S&B Germany)

Modification log:
refer to chapter "Record of Revisions"

Parking and leisure centre systems
Breite Straße 132
41238 Mönchengladbach
www.scheidt-bachmann.com

Subject to change.

Contents

1 Introduction

The S&B-Report Generator is available on the Management Computer Workstations or the Management Computer itself. With the Report Generator the predefined Reports can be run locally and will be available for printing on the Windows® Standard printer.

1.1 Scope of Application

Use the Reports module as a management tool to monitor transaction activities and review transactional data.

The provided Reports are divided into five major Report packages:

- ☐ Accounting Reports
- ☐ APS Reports
- ☐ Credit Card Reports
- ☐ LPI Reports
- ☐ LPR Reports

1.2 Used Symbols

The following symbols are used in this online help:

Note / general information

General warning, which must be taken into consideration!

1.3 How to Start the Application

With the appropriate Access Rights the Report Generator is started as follows:

B From the entervo main screen, click the following button:

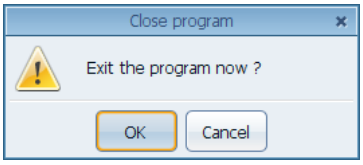
C Select the following list menu entry:

✓ The **Start Screen** appears.

1.4 How to Close the Application

B Click the following button from the toolbar to close the application:

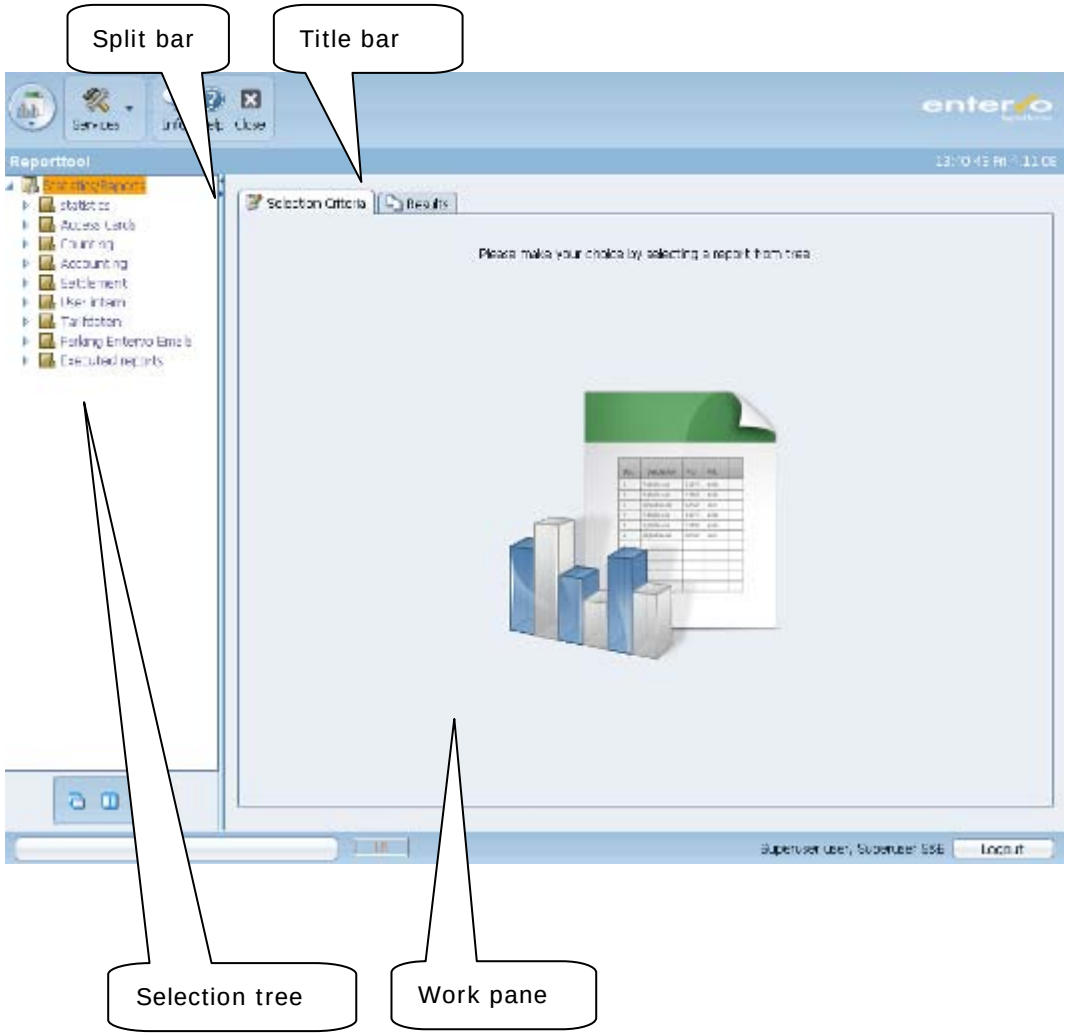
C The following dialogue appears. Click **OK**:



✓ The application is closed.

1.5 The Start Screen

The windows shown in this Operating Manual may vary from the individual representations in your system and are used for the explanation of terms. The appearance of the windows may vary depending on the extent and configuration of your system.



Selection tree

The selection tree is used to access all screens of the currently selected application. If the selection tree contains more information than can be displayed, a scroll bar is provided at the right side of the window. Use the scroll bar to access more information. You can open or close the folders in the selection tree by clicking on the arrows beside the folder name. . Click on the report name to display the Selection Criteria in the work pane.

The tooltip can activate additional informative text.

Split bar

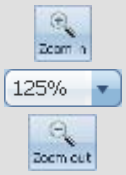
The bar can be moved to the left or to the right by clicking the two "Arrow" buttons or by using the mouse when the left mouse button is held. When doing so, the displayed windows will also be changed.

Title bar

The title bar displays the name of the application.

Work pane

The workpane is changed depending on the selection in the selection tree.

Button	Function
	Click this button to generate a report based on your selection criteria
	Click this button to export the report and save it to an internal or external drive.
	Zoom in / zoom out of the print preview
	Jump to the first page
	Jump one page back
	Jump to the next page
	Jump to the last page
	Print

2 Key Terms

Company

A contractual partner of the parking facility owner. Each company has stored master data records for agreed contract terms, such as payment arrangements. Typically, the Company is invoiced once a month for parking by its Participants.

Participants

Associates (employees or other) of an affiliated Company who have stored master data records that define the parking terms and conditions of use.

Participants may also include internal staff associated with the parking facility company or management company.

Cardholders

Cardholders are the same as Participants.

Access Card

The type of system card, encoded with access details that is used by a Participant or Operator to enter and leave the parking facility. The card data is read at both the Entry and Exit devices.

Non-Rev

A reporting category for monetary values associated with transactions that generated revenue in a previous shift but do not count as revenue for the current cashier shift. For example: Scheidt & Bachmann money-value cards are sold in the first shift and used within the second shift. These cards count under the category “Non-Revenue” within the second shift, because the actual cash or Credit Card Payment was already counted within the first shift. The same is true for the use of money coupons.

This term does not apply to Access Cards or other cards or coupons that are billed in the future.

Shift-based

Information in this report is shift related. When a time frame or a specific date is chosen within the pre-selection screen for the report, the report will show information for all shifts which were **closed and settled by the system** within the specified time frame or on the chosen day. For example if you are choosing September 2nd, 2011 as a specific date for a shift related report all shifts are shown which were closed and already available on the LR on September 2nd. This means the report also includes shifts which had been started on or earlier than September 2nd as long as they are closed on September 2nd.

Transaction- or Time-based

Information in this report is based on the specific date and time the transaction occurred. When a time frame or a specific date is chosen within the pre-selection screen for the report, the report will show information for all transactions which were processed within the specified time frame or on the chosen day. For example if you are choosing September 2nd, 2011 as a specific date for a transaction-based report all transactions are shown which

are already available on the LR for September 2nd. This means the report includes all transactions processed between Sept 2nd 00:00 (12:00am) and Sept 2nd 23:59 (11:59pm) regardless of when the shift was closed.

Snap Shot

The data reflected in the report is based on a specific moment in time, either pre-set or a requested time.

Exit Transactions

Information on the report is based on the transactions presented at the exit. This would include payments at any exit device.

Gate Movements

Any time the gate is opened and then closed in conjunction with the loop sequence (a car drives over the loops), a count signal is created. This would also include any time a gate is opened due to a completed loop sequence, (normal entries or exits). If a gate arm is manually opened or broken and a car drives over the loops, the count signals are forwarded within the system recognized as an entry or exit with the gate manually opened or broken until the gate arm is manually lowered or the broken barrier has been fixed. Gate movements are only counted if they appear together with the loop sequence, (a manual gate open/close with no car passing the loops would not count).

Loop Sequences

Any time a completed loop sequence occurs, a count signal is sent. This includes any time a barrier is locked open or broken off and cars continue to enter/exit. The count signals are forwarded within the system as an entry or exit with a broken barrier or locked barrier.

Payment Transactions

All transactions which are booked within a shift settlement. This means transactions which will have a calculated amount to pay equal to or greater than $0.00. If the net amount to pay is calculated to be $0.00 it does not matter how this amount has been calculated. Grace time and Access Card usage as well as full validations or ISF payments are understood to be payment transactions even though their net amounts may equal $0.00.

Export

All reports described in this document are available for Export. Once the Selection Criteria has been selected, click the Export button. You can save this file on any external or internal media.

EPAN

The Epan shown on some reports allows a cross reference to the access media. It is the unique serial ID of the parking ticket or the access card.

APS or POF

Are either “Automated Pay Stations” or “Pay On Foot” stations. These 2 abbreviations are commonly used throughout the US. Within this document the term APS is used.

COMPRESSED / UNCOMPRESSED

Due to performance reasons it is necessary to have the system compress the transactional data, before it will be available for reporting purposes. This compression takes place during the night at around 2:00 a.m.

Reports which use compressed data are marked “(Compressed)” whereas reports which use uncompressed data are marked “(Uncompressed)”.

Please note: Due to the compression, the level of detail of the transactional data will be reduced. For the hourly compression the booking time stamp will be truncated down to the hour, whereas the the booking time stamp in the daily compression will be truncated down to the day.

Exception Transactions

Each transaction that is not a “normal parking transaction” =

- **Entry**
- **Parking**
- **Payment (no revenue reduction)**
- **Exit**

called as an “**Exception Transaction**”.

REMARK: *All figures and numbers for each report sample are created randomly. They do not match and are not comparable to any other sample provided within this document.*
In addition, the selection of the pre-selection screen does not match the content and/or sort criteria of the report samples.

Depending on site specific configurations not all reports described in this documentation will necessarily apply to those installed on your system!

3 Accounting Reports

3.1 Detailed Transaction Analysis Summary

3.1.1 Short Description

This report will detail each transaction booked in the system. It provides details, for example, on ticket id (EPAN), time stamps, validations or coupons, credit card# gross and net totals. It will mark Revenue Reductions in red and credit card usage in yellow

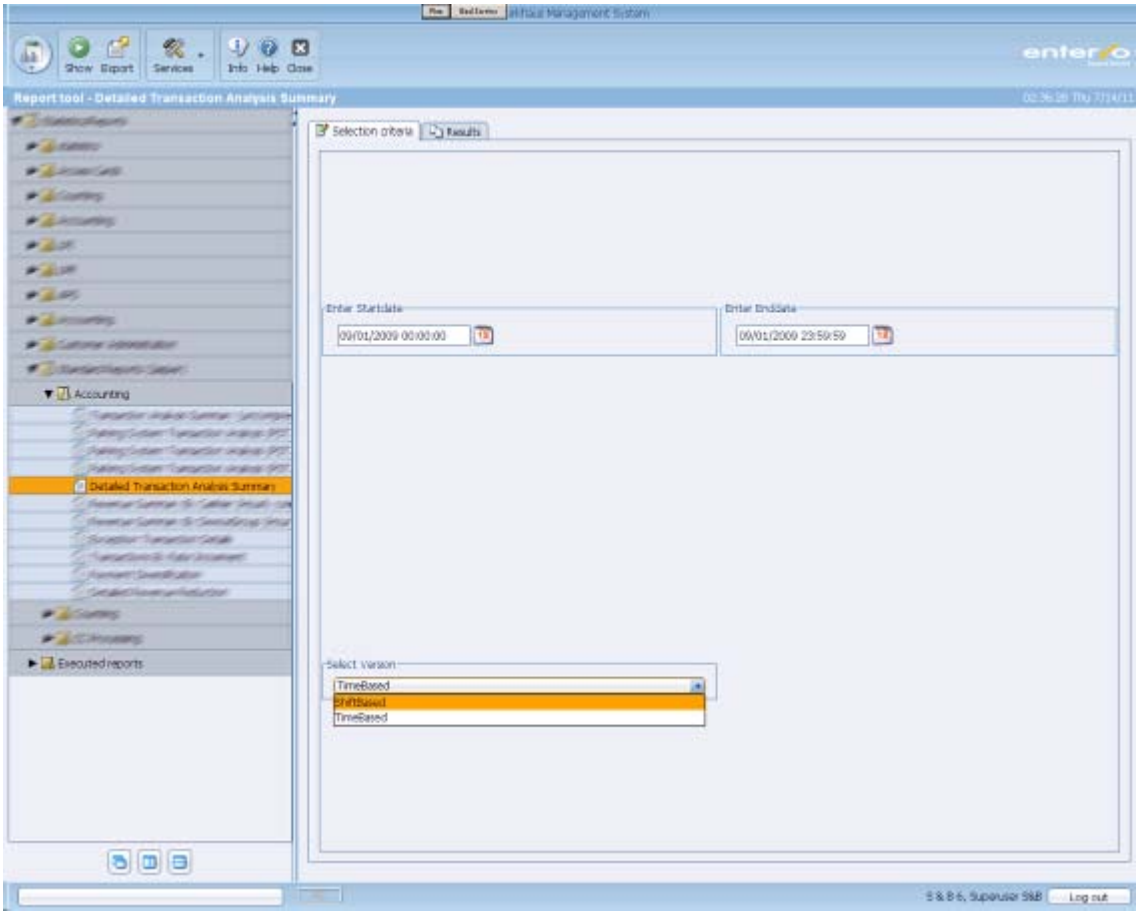
If the reported device is a POF it will provide the date and time the ticket was paid, but will not provide the actual exit time.

This report is the first choice to audit cashiers on a daily basis. Due to the provided level of detail, it is not meant to pull data for a longer time period than 1 week (depending on the number of transactions processed by the system).

3.1.2 Source Data

The Report is based on payment transactions and can be pulled either time- or shift-based.

3.1.3 Pre-selection Screen



The Preselection Screen offers the following options:

- **StartDate**
  Enter the exact time stamp at which the evaluation starts
- **EndDate (must be greater than StartDate)**
  Enter the exact time stamp at which the evaluation ends
- **Version**
  - TIMEBASED uses the booking timestamp
  - SHIFTBASED uses the shiftend timestamp

  for evaluation.

3.1.4 Report Sample (2 Pages / Shift Based)

parking experts

Detailed Transaction Analysis (uncompressed)

StartDate: 09/01/2009 00:00:00
EndDate: 09/01/2009 23:59:59
Selected Version: ShiftBased

Epan	Booking DateTime Device	Entry DateTime / Exit DateTime	Device / Device	Article ID	Gross	Reduction	Net	Cash	Credit
Shift #	**Device #**	**Device Name**	**Shiftstart**	**Shiftend**	**Cashiername**				
508	202	Exit2	08/31/2009 02:45:00	09/01/2009 02:45:01	Exit 2				
02994077017011029243249980??	08/31/2009 07:25:24	7017 / 202	08/31/2009 06:56:38	7017 / 102	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
			08/31/2009 07:25:24	7017 / 202		1	0	0	0	0
02994077017011029243266520??	08/31/2009 08:19:42	7017 / 202	08/31/2009 07:24:12	7017 / 102	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
			08/31/2009 08:19:42	7017 / 202		1	0	0	0	0
02994077017011049243323270??	08/31/2009 08:59:32	7017 / 202	08/31/2009 08:58:47	7017 / 104	0 / 30100 Lagtime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
			08/31/2009 08:59:32	7017 / 202		1	0	0	0	0
02994077017011039243309900??	08/31/2009 09:39:45	7017 / 202	08/31/2009 08:36:30	7017 / 103	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
			08/31/2009 09:39:45	7017 / 202		1	0	0	0	0
02994077017011039243322200??	08/31/2009 09:51:42	7017 / 202	08/31/2009 08:57:00	7017 / 103	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
			08/31/2009 09:51:42	7017 / 202		1	0	0	0	0
02994077017011029243320700??	08/31/2009 10:04:17	7017 / 202	08/31/2009 08:54:30	7017 / 102	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
			08/31/2009 10:04:17	7017 / 202		1	0	0	0	0
02994077017011039243336240??	08/31/2009 10:05:40	7017 / 202	08/31/2009 09:20:24	7017 / 103	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
			08/31/2009 10:05:40	7017 / 202		1	0	0	0	0
02994077017011039243319900??	08/31/2009 10:07:17	7017 / 202	08/31/2009 08:53:10	7017 / 103	0 / 10100 Paid Ticket	$ 3.00	$ 0.00	$ 3.00	$ 0.00	$ 3.00
			08/31/2009 10:07:17	7017 / 202		1	0	1	0	1
015>4:964=;1?05350021?16;7:5					1003 / 1259 Credit Mastercard					
02994077017011029243316330??	08/31/2009 10:07:56	7017 / 202	08/31/2009 08:47:13	7017 / 102	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
			08/31/2009 10:07:56	7017 / 202		1	0	0	0	0
02994077017011039243331240??	08/31/2009 10:11:48	7017 / 202	08/31/2009 09:12:04	7017 / 103	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
			08/31/2009 10:11:48	7017 / 202		1	0	0	0	0
02994077017011039243363300??	08/31/2009 10:17:18	7017 / 202	08/31/2009 10:05:30	7017 / 103	0 / 10100 Paid Ticket	$ 3.00	$ 0.00	$ 3.00	$ 0.00	$ 3.00
			08/31/2009 10:17:18	7017 / 202		1	0	1	0	1
01095>?<:>;?<6326?>>15;7439					1003 / 1257 Credit Visa					

Page : 1 / 502 Detailed Transaction Analysis (uncompressed) 1.0.0 Printed : 07/13/2011 06:04:52

Epan	Booking DateTime Device	Entry DateTime Exit DateTime	Device Device	Article ID	Gross	Reduction	Net	Cash	Credit
0299407701701102924335269 0??	08/31/2009 10:18:55 7017 / 202	08/31/2009 09:47:49	7017 / 102	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
		08/31/2009 10:18:55	7017 / 202		1	0	0	0	0
02994077017011039243348240??	08/31/2009 10:19:11 7017 / 202	08/31/2009 09:40:24	7017 / 103	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
		08/31/2009 10:19:11	7017 / 202		1	0	0	0	0
02994077017011029243350520??	08/31/2009 10:19:30 7017 / 202	08/31/2009 09:44:12	7017 / 102	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
		08/31/2009 10:19:30	7017 / 202		1	0	0	0	0
02994077017011049243316400??	08/31/2009 10:21:21 7017 / 202	08/31/2009 08:47:20	7017 / 104	0 / 10100 Paid Ticket	$ 3.00	$ 0.00	**$ 3.00**	$ 0.00	$ 3.00
		08/31/2009 10:21:21	7017 / 202		1	0	1	0	1
01?75?508=;:9958955223>:?5>				1003 / 1259 Credit Mastercard					
02994077017011029243362890??	08/31/2009 10:22:08 7017 / 202	08/31/2009 10:04:49	7017 / 102	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
		08/31/2009 10:22:08	7017 / 202		1	0	0	0	0
02994077017011039243347340??	08/31/2009 10:22:27 7017 / 202	08/31/2009 09:38:54	7017 / 103	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
		08/31/2009 10:22:27	7017 / 202		1	0	0	0	0
02994077017011029243363000??	08/31/2009 10:22:48 7017 / 202	08/31/2009 10:05:00	7017 / 102	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
		08/31/2009 10:22:48	7017 / 202		1	0	0	0	0
02994077017011019243358770??	08/31/2009 10:23:13 7017 / 202	08/31/2009 09:57:57	7017 / 101	0 / 10100 Paid Ticket	$ 3.00	$ 0.00	**$ 3.00**	$ 0.00	$ 3.00
		08/31/2009 10:23:13	7017 / 202		1	0	1	0	1
01?25;?46=081<17267975=>5353				1003 / 1257 Credit Visa					
02994077017011029243369230??	08/31/2009 10:23:49 7017 / 202	08/31/2009 10:15:23	7017 / 102	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
		08/31/2009 10:23:49	7017 / 202		1	0	0	0	0
02994077017011039243346050??	08/31/2009 10:25:48 7017 / 202	08/31/2009 09:36:45	7017 / 103	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
		08/31/2009 10:25:48	7017 / 202		1	0	0	0	0
02994077017011029243359190??	08/31/2009 10:26:40 7017 / 202	08/31/2009 09:58:39	7017 / 102	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
		08/31/2009 10:26:40	7017 / 202		1	0	0	0	0
02994077017011029243355070??	08/31/2009 10:28:29 7017 / 202	08/31/2009 09:51:47	7017 / 102	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
		08/31/2009 10:28:29	7017 / 202		1	0	0	0	0
02994077017011039243341810??	08/31/2009 10:32:18 7017 / 202	08/31/2009 09:29:41	7017 / 103	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
		08/31/2009 10:32:18	7017 / 202		1	0	0	0	0
02994077017011029243372420??	08/31/2009 10:36:01 7017 / 202	08/31/2009 10:20:42	7017 / 102	0 / 10100 Paid Ticket	$ 3.00	$ 0.00	**$ 3.00**	$ 0.00	$ 3.00
		08/31/2009 10:36:01	7017 / 202		1	0	1	0	1
01>32?0:0:7><39248190<24>?72				1003 / 1259 Credit Mastercard					
02994077017011029243312560??	08/31/2009 10:37:59 7017 / 202	08/31/2009 08:40:56	7017 / 102	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
		08/31/2009 10:37:59	7017 / 202		1	0	0	0	0
02994077017011029243352280??	08/31/2009 10:38:30 7017 / 202	08/31/2009 09:47:08	7017 / 102	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
		08/31/2009 10:38:30	7017 / 202		1	0	0	0	0

Page : 2 / 502 **Detailed Transaction Analysis (uncompressed) 1.0.0** **Printed :07/13/2011 06:04:52**

3.1.5 Report Sample (2 Pages / Time Based)

Detailed Transaction Analysis (uncompressed)

StartDate:	09/01/2009 00:00:00
EndDate:	09/01/2009 23:59:59
Selected Version:	TimeBased

Epan	Booking DateTime Device	Entry DateTime Exit DateTime	Device Device	Article ID	Gross	Reduction	Net	Cash	Credit
				Evaluation for Facility : 0					
N/A	09/01/2009 11:35:02 7017 / 701	N/A	N/A	0 / 11100 Valet Charge	$ 4.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
Cancelled Transaction		N/A	N/A		1	0	0	0	0
SubTotal					$ 4.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
					1	0	0	0	0
				Evaluation for Facility : FC7017					
02994077017091796500013????	09/01/2009 12:24:56 7017 / 611	09/01/2009 12:24:56	7017 / 611	0 / 900 Cash backticket	$ 2.00	$ 0.00	$ 2.00	$ 2.00	$ 0.00
		N/A	N/A		2	0	1	1	0
0299407701709159650018077???	09/01/2009 19:48:18 7017 / 609	09/01/2009 19:48:18	7017 / 609	0 / 900 Cash backticket	$ 2.00	$ 0.00	$ 2.00	$ 2.00	$ 0.00
		N/A	N/A		2	0	1	1	0
SubTotal					$ 4.00	$ 0.00	$ 4.00	$ 4.00	$ 0.00
					4	0	2	2	0
				Evaluation for Facility : Facility 1					
0299407701702000090000907???	09/01/2009 00:05:28 7017 / 205	08/31/2009 15:11:45	7017 / 105	0 / 30200 Grace Access	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
		09/01/2009 00:05:28	7017 / 205		1	0	0	0	0
0299407701702000030086307???	09/01/2009 00:12:39 7017 / 203	08/31/2009 15:53:46	7017 / 104	0 / 30200 Grace Access	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
		09/01/2009 00:12:39	7017 / 203		1	0	0	0	0
0299407701702000030117407???	09/01/2009 00:20:34 7017 / 202	08/31/2009 23:19:00	7017 / 202	0 / 30200 Grace Access	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
		08/31/2009 23:19:07	7017 / 803		1	0	0	0	0
029940770170110362437596907?	09/01/2009 00:26:09 7017 / 202	08/31/2009 21:05:59	7017 / 103	0 / 10100 Paid Ticket	$ 3.00	$ 0.00	$ 3.00	$ 0.00	$ 3.00
		09/01/2009 00:26:09	7017 / 202		1	0	1	0	1
01;254733 28=866304954750 1::1				1003 / 1257 Credit Visa					
0299407701702000650000107???	09/01/2009 00:31:17 7017 / 209	08/31/2009 16:01:16	7017 / 109	0 / 30200 Grace Access	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
		09/01/2009 00:31:17	7017 / 209		1	0	0	0	0

Page : 1 / 476 Detailed Transaction Analysis (uncompressed) 1.0.0 Printed : 07/13/2011 07:08:00

Epan	Booking DateTime Device	Entry DateTime / Exit DateTime	Device / Device	Article ID	Gross	Reduction	Net	Cash	Credit
0299407701702000030117407???	09/01/2009 00:41:19 7017 / 209	09/01/2009 00:24:02	7017 / 108	0 / 30200 Grace Access	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
		09/01/2009 00:41:19	7017 / 209		1	0	0	0	0
0299407701702000030117407???	09/01/2009 01:46:43 7017 / 208	09/01/2009 01:14:41	7017 / 102	0 / 30200 Grace Access	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
		09/01/2009 01:46:43	7017 / 208		1	0	0	0	0
0299407701702000030117407???	09/01/2009 03:11:00 7017 / 205	09/01/2009 02:35:33	7017 / 104	0 / 30200 Grace Access	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
		09/01/2009 03:11:00	7017 / 205		1	0	0	0	0
0299407701702000030117407???	09/01/2009 03:46:52 7017 / 209	09/01/2009 03:20:49	7017 / 108	0 / 30200 Grace Access	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
		09/01/2009 03:46:52	7017 / 209		1	0	0	0	0
02994077017011059244025760??	09/01/2009 04:13:53 7017 / 603	09/01/2009 00:42:56	7017 / 105	0 / 10100 Paid Ticket	$ 5.00	$ 0.00	$ 5.00	$ 0.00	$ 5.00
		09/01/2009 04:15:09	7017 / 202		1	0	1	0	1
01;25473328<8683049547601::1				1003 / 1257 Credit Visa					
02994077017011059244025760??	09/01/2009 04:15:09 7017 / 202	09/01/2009 00:42:56	7017 / 105	0 / 30099 GraceTime	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
		09/01/2009 04:15:09	7017 / 202		1	0	0	0	0
0299407701702000030117407???	09/01/2009 04:50:59 7017 / 208	09/01/2009 04:14:52	7017 / 109	0 / 30200 Grace Access	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
		09/01/2009 04:50:59	7017 / 208		1	0	0	0	0
0299407701702000150061807???	09/01/2009 06:46:22 7017 / 205	08/31/2009 20:09:03	7017 / 105	0 / 30200 Grace Access	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
		09/01/2009 06:46:22	7017 / 205		1	0	0	0	0
0299407701702000030117407???	09/01/2009 06:53:08 7017 / 204	09/01/2009 05:24:16	7017 / 109	0 / 30200 Grace Access	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
		09/01/2009 06:53:08	7017 / 204		1	0	0	0	0
02994077017011069244188390??	09/01/2009 06:59:07 7017 / 209	09/01/2009 05:13:59	7017 / 108	0 / 10100 Paid Ticket	$ 3.00	$ 0.00	$ 3.00	$ 0.00	$ 3.00
		09/01/2009 06:59:07	7017 / 209		1	0	1	0	1
01>719;<<71 17598687838 4<2=;				1003 / 1259 Credit					
02994077017011039244255540??	09/01/2009 07:53:51 7017 / 202	09/01/2009 07:05:54	7017 / 103	0 / 10100 Paid Ticket	$ 3.00	$ 0.00	$ 3.00	$ 0.00	$ 3.00
		09/01/2009 07:53:51	7017 / 202		1	0	1	0	1
018;9334;5627205985 1>4<47595				1003 / 1257 Credit Visa					
0299407701702000030117407???	09/01/2009 08:07:39 7017 / 203	09/01/2009 07:08:36	7017 / 105	0 / 30200 Grace Access	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
		09/01/2009 08:07:39	7017 / 203		1	0	0	0	0
0299407701702000470000107???	09/01/2009 08:28:17 7017 / 803	09/01/2009 08:25:35	7017 / 104	0 / 30200 Grace Access	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
		09/01/2009 08:28:17	7017 / 803		1	0	0	0	0
0299407701702000030026007???	09/01/2009 08:30:02 7017 / 203	09/01/2009 08:17:09	7017 / 104	0 / 30200 Grace Access	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
		09/01/2009 08:30:02	7017 / 203		1	0	0	0	0
02994077017011029244304290??	09/01/2009 08:30:10 7017 / 202	09/01/2009 08:27:09	7017 / 102	0 / 30100 Lagtime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
		09/01/2009 08:30:10	7017 / 202		1	0	0	0	0
02994077017011099244292870??	09/01/2009 08:41:41 7017 / 209	09/01/2009 08:08:17	7017 / 109	0 / 10138 Eval 10138	$ 3.00	$ -3.00	$ 0.00	$ 0.00	$ 0.00
		09/01/2009 08:41:41	7017 / 209		1	1	1	0	0
N/A				901 / 13138 Val 13138					

Page : 2 / 476 Detailed Transaction Analysis (uncompressed) 1.0.0 Printed :07/13/2011 07:08:00

At the end of each section, subtotals of transactions and amounts are included. At the end of the report these subtotals are summarized into a Grand total.

Credit Card transactions will be contrasted in YELLOW.

Revenue Reductions will be contrasted in RED.

Cancelled transactions are marked in RED as : Cancelled Transaction

3.1.6 Description of each column:

For each transaction, at least two rows will appear to show the required information. In case of a revenue reduction or a payment with credit card, additional lines will appear which will list more details.

Ref.	Column Header	Content
A	Epan	Unique ticket identification number.
B	Booking Date - Time	Exact booking timestamp
C	Device	Cell computer # and Device #, where transaction was processed
D(1)	Entry Date -Time	Time stamp of registered entry. In case of “Non Parking” articles (i.e. “Car Wash”) no entry time stamp is displayed.
D(2)	Exit Date -Time	Time stamp of registered exit. In case of “Non Parking” articles (i.e. “Car Wash”) no entry time stamp is displayed.
E (1)	Device	Cell computer # and Device #, where entry was recorded
E (2)	Device	Cell computer # and Device #, where exit was recorded
F	Article ID	System generated Article Id and Text. This is the same ID and text as it appears on the Settlements
G	Gross Fee	This is the gross revenue for this transaction.
G (2)		Count of articles which will result in a gross revenue
H	Reduction	Total Revenue Reduction amount. For easier auditing this column will be marked in red. Additionally, each single reduction will result in an additional line where Epan (if available), the Article ID and the Article Text are shown.
H (2)		Total Count of Revenue Reduction articles.
I	Net Fee	Calculated Net Revenue Amount. This is not calculated by the report, but by the system
I (2)		Total Count for Net Fee. Usually there is only 1 Net Fee within a transaction. However, if a

		transaction is cancelled, the count for the Net Fee will be “0”
J	Cash	Amount paid in Cash
J (2)		Count of Cash Payments
K	Credit	Amount paid cashless (usually Credit). For easier auditing, this column will be marked yellow. Additionally, each cashless payment will result in an additional line where hashed Epan (if available), the Article ID and the Article Text are shown.
K (2)		Count of cashless Payments

3.2 Detailed Revenue Reduction Report

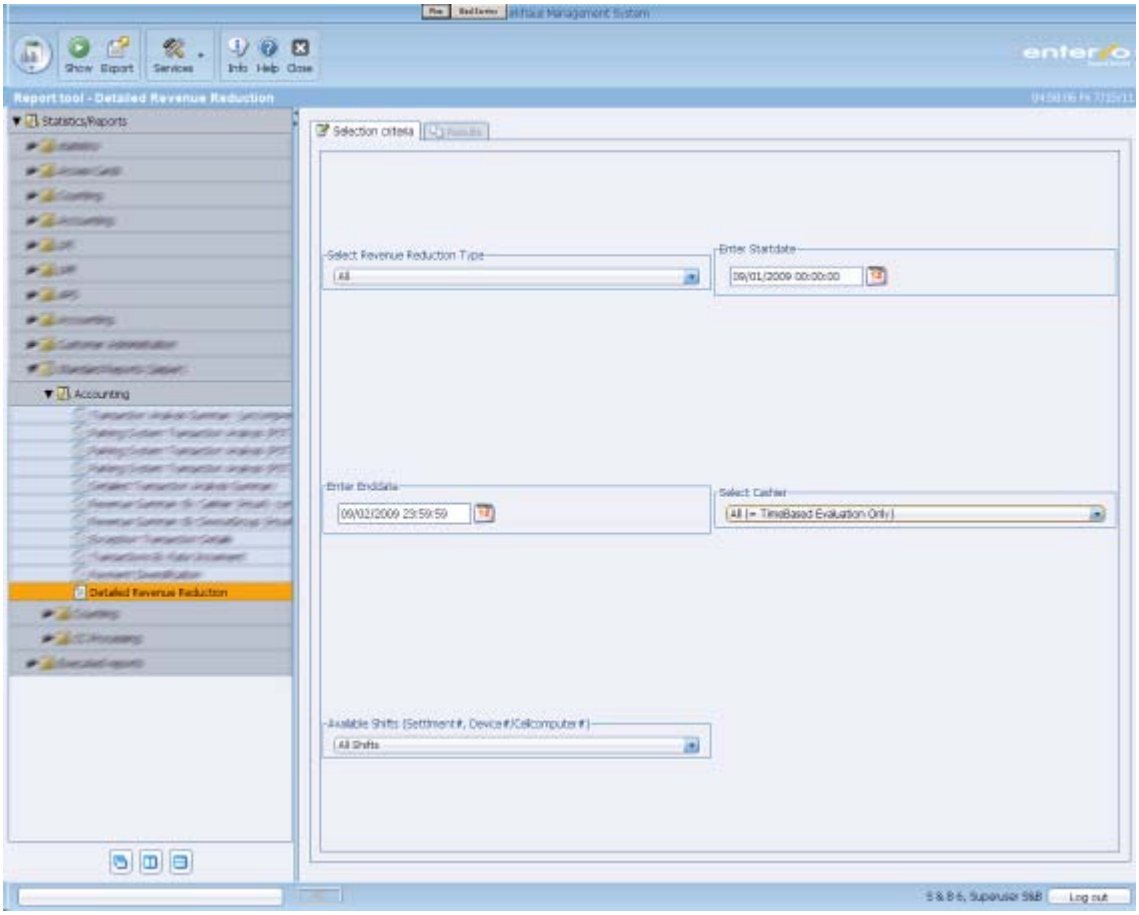
3.2.1 Short Description

The Report only focuses on the revenue reduction itself. It will list several details such as Epan of the validated access media along with information of when, where and how much was validated. Each single revenue reduction transaction will be listed as a separate line. Additionally, it will show multiple validations for the same access media by marking each of its details in yellow.

This report can be pulled either time-based or shift-based when selecting a cashier or device (see details on this below).

The report enables the user, for example, to print a “delivery note” for shops in an airport, validating parking tickets for their customers.

3.2.2 Pre-selection Screen



The Pre-selection screen offers the following options:

- **Revenue Reduction Type**

Either “All” or a certain Revenue reduction will be selectable

- **StartDate**

  Enter the exact time stamp in which the evaluation starts

- **EndDate (must be greater than StartDate)**

  Enter the exact time stamp in which the evaluation ends

- **Cashier**
  - When selecting “All” a TIMEBASED evaluation will be processed. In this case, all sales within the given time frame will be evaluated (Booking Time stamp)
  - When selecting a certain cashier (or device) a SHIFTBASED evaluation will be processed. In this case, all sales of shifts, which ended within the given time frame will be evaluated

- **Available Shifts**

  When a certain cashier or device is selected, this drop down box is filled with shifts which were closed within the given time frame. Either one of these shifts or all shifts are selectable.

3.2.3 Report Sample (2 Pages / Shift Based)

parking experts

Detailed Revenue Reduction Report

Selected Article: All Discount Articles
Selected StartDate: 09/01/2009 00:00:00
Selected EndDate: 09/03/2009 23:59:59
Selected Cashier: Cashier 1
Selected Shift: All Shifts Closed within Selected Timeframe

Discounted Article / Epan	Device Entry DateTime	Device Exit DateTime	Length Of Stay / Booking DateTime	Red.Article Description	Gross Revenue	Current Reduc.	Other Coupon	Other Valid.	Used ISF	Other Reduc.	Net	Cash Credit
Shift #	**Device ID**	**DeviceName**	**ShiftStart**		**ShiftEnd**		**CashierName**					
1973	801	ExCash1	09/01/2009 13:34:00		09/01/2009 14:16:00		Cashier 1					
Eval 10127		Entry2	ExCash1	0d 01h 06m	**901/13127**	$ 3.00	$ -3.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
02994077017011029244451507?		09/01/2009 12:32:31	09/01/2009 13:38:18	09/01/2009 13:38:18	**Val 13127**		1	0	0	0		
Eval 10127		Entry2	N/A		**901/13127**	$ 3.00	$ -3.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
02994077017011029244493507?		09/01/2009 13:42:30	N/A	09/01/2009 14:14:17	**Val 13127**		1	0	0	0		
ShiftTotal							$ -6.00					
							2					

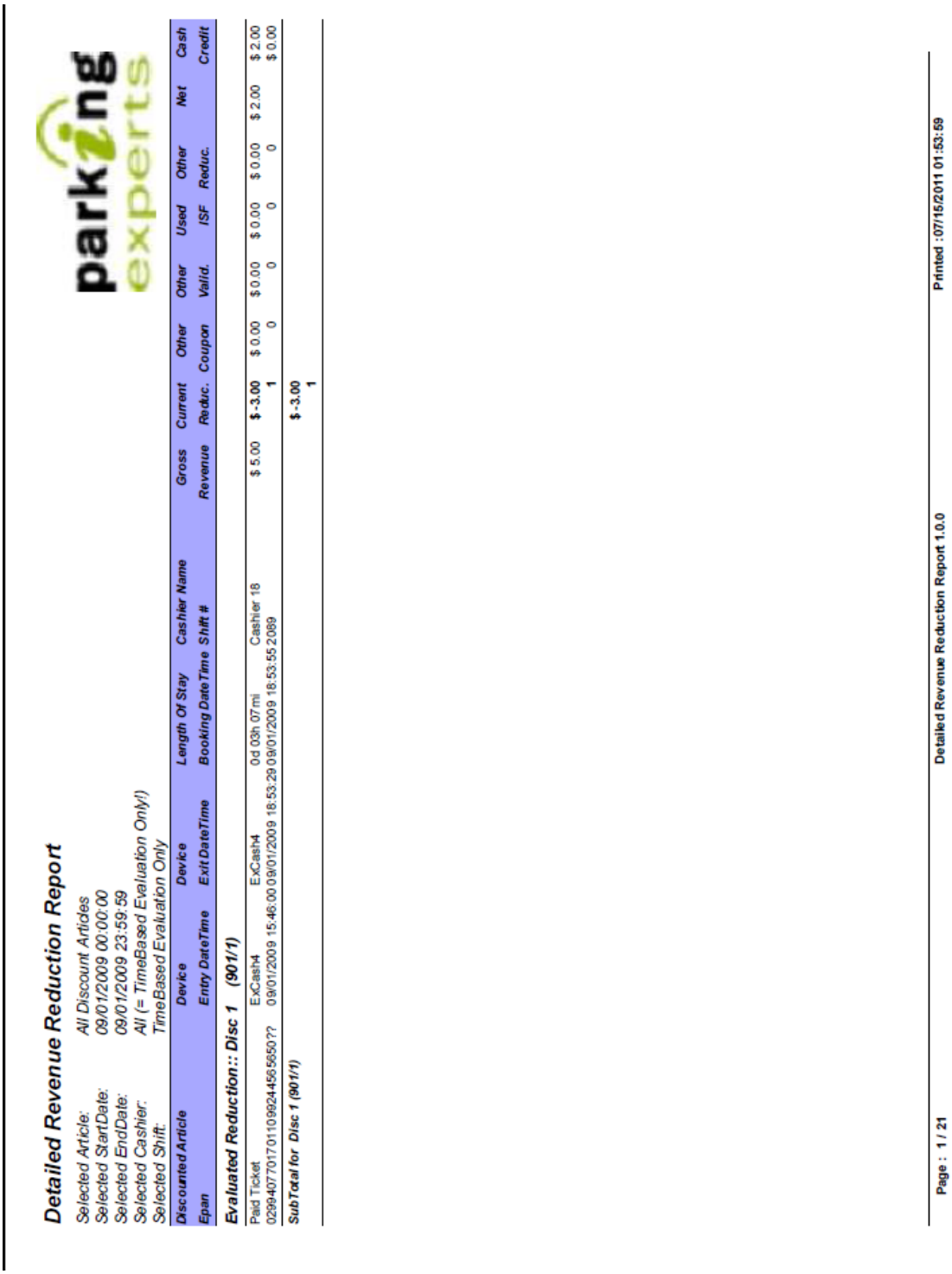
Discounted Article Epan		Device Entry DateTime	Device Exit DateTime	Length Of Stay Booking DateTime	RedArticle Description	Gross Revenue	Current Reduc.	Other Coupon	Other Valid.	Used ISF	Other Reduc.	Net	Cash Credit
Shift #	Device ID	DeviceName		ShiftStart		ShiftEnd			CashierName				
2090	804	ExCash4		09/01/2009 19:25:00		09/01/2009 19:59:00		Cashier 1					
Unreadable ticket		ExCash4	ExCash4	0d 01h 57m	901/1003	$ 3.00	$ -3.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
02994077017018049244713390??		09/01/2009 17:51:00	09/01/2009 19:48:57	09/01/2009 19:48:59	Disc 1003		1	0	0	0	0		
ShiftTotal							$ -3.00						
							1						
GrandTotal							$ -9.00						
							3						

Page : 2 / 2 Detailed Revenue Reduction Report 1.0.0 Printed : 07/15/2011 02:50:58

For each shift, the report starts on a new page showing details such as Shift#, the Device ID and Device name, Time stamps of Shift start and Shift end and the Cashiers name (could also be a device name, when running unoccupied) on top.

At the end of each shift a Shift Summary is provided. Due to the possibility of multiple validations, only the Revenue Reduction Amount is added and provided.

3.2.4 Report Sample (2 Pages / Time Based)



parking experts

Detailed Revenue Reduction Report

Selected Article: All Discount Artides
Selected StartDate: 09/01/2009 00:00:00
Selected EndDate: 09/01/2009 23:59:59
Selected Cashier: All (= TimeBased Evaluation Only!)
Selected Shift: TimeBased Evaluation Only

Discounted Article / Epan	Device Entry DateTime	Device Exit DateTime	Length Of Stay Booking DateTime	Cashier Name Shift #	Gross Revenue	Current Reduc.	Other Coupon	Other Valid.	Used ISF	Other Reduc.	Net	Cash Credit
Evaluated Reduction:: Disc 1 (901/1)												
Paid Ticket	ExCash4	ExCash4	0d 03h 07mi	Cashier 18	$ 5.00	$ -3.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 2.00	$ 2.00
02994077017011099244565657?	09/01/2009 15:46:00	09/01/2009 18:53:29	09/01/2009 18:53:55	2089		1	0	0	0	0		$ 0.00
SubTotal for Disc 1 (901/1)						$ -3.00						
						1						

Page : 1 / 21 Detailed Revenue Reduction Report 1.0.0 Printed : 07/15/2011 01:53:59

Discounted Article	Device	Device	Length Of Stay	Cashier Name		Gross	Current	Other	Other	Used	Other	Net	Cash
Epan	Entry DateTime	Exit DateTime	Booking DateTime	Shift #		Revenue	Reduc.	Coupon	Valid.	ISF	Reduc.		Credit
Evaluated Reduction:: Disc. 10-trip Card (901/6)													
Paid Ticket	Entry3	Ext2	0d 01h 18mi	Ext2		$ 3.00	$ -3.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
02994077017011039244391560??	09/01/2009 10:52:36	09/01/2009 12:10:37	09/01/2009 12:10:37	509			1	0	0	0	0		$ 0.00
Use 10-Trip Pass	Entry5	Ext5	0d 04h 57mi	Ext5		$ 4.80	$ -4.80	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
02994077017064295510348???	09/01/2009 09:14:44	09/01/2009 14:11:57	09/01/2009 14:11:57	502			1	0	0	0	0		$ 0.00
Use 10-Trip Pass	Entry5	Ext5	0d 05h 34mi	Ext5		$ 4.80	$ -4.80	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
02994077017064288703163???	09/01/2009 09:24:01	09/01/2009 14:58:50	09/01/2009 14:58:50	502			1	0	0	0	0		$ 0.00
Paid Ticket	Entry4	Ext3	0d 01h 19mi	APS4		$ 3.00	$ -3.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
02994077017011049244501280??	09/01/2009 13:55:28	09/01/2009 15:14:13	09/01/2009 15:12:47	556			1	0	0	0	0		$ 0.00
Use 10-Trip Pass	Entry5	Ext5	0d 05h 51mi	Ext5		$ 4.80	$ -4.80	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
02994077017064288303117???	09/01/2009 09:22:51	09/01/2009 15:13:30	09/01/2009 15:13:30	502			1	0	0	0	0		$ 0.00
Use 10-Trip Pass	Entry5	Ext4	0d 07h 25mi	Ext4		$ 4.80	$ -4.80	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
02994077017064291008587???	09/01/2009 08:28:31	09/01/2009 15:53:12	09/01/2009 15:53:12	503			1	0	0	0	0		$ 0.00
Use 10-Trip Pass	Entry5	Ext4	0d 07h 08mi	Ext4		$ 4.80	$ -4.80	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
02994077017064288503142???	09/01/2009 09:14:08	09/01/2009 16:22:46	09/01/2009 16:22:46	503			1	0	0	0	0		$ 0.00
Paid Ticket	Entry3	ExCash3	0d 01h 17mi	ExCash3		$ 3.00	$ -3.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
02994077017011039244552920??	09/01/2009 15:21:32	09/01/2009 16:38:55	09/01/2009 16:38:55	550			1	0	0	0	0		$ 0.00
Use 10-Trip Pass	Entry5	Ext5	0d 07h 42mi	Ext5		$ 4.80	$ -4.80	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
02994077017064290408343???	09/01/2009 09:15:02	09/01/2009 16:57:03	09/01/2009 16:57:03	502			1	0	0	0	0		$ 0.00
Paid Ticket	Entry3	Ext2	0d 01h 07mi	Ext2		$ 3.00	$ -3.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
02994077017011039244578040??	09/01/2009 16:03:24	09/01/2009 17:10:56	09/01/2009 17:10:56	509			1	0	0	0	0		$ 0.00
Use 10-Trip Pass	Entry5	Ext4	0d 08h 02mi	Ext4		$ 4.80	$ -4.80	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
02994077017064288303118???	09/01/2009 09:26:34	09/01/2009 17:28:23	09/01/2009 17:28:23	503			1	0	0	0	0		$ 0.00
Use 10-Trip Pass	Entry2	Ext3	0d 05h 01mi	Ext3		$ 4.80	$ -4.80	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
02994077017064293709621???	09/01/2009 12:43:03	09/01/2009 17:44:06	09/01/2009 17:44:06	502			1	0	0	0	0		$ 0.00
Use 10-Trip Pass	Entry5	Ext5	0d 08h 47mi	Ext5		$ 4.80	$ -4.80	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
02994077017064288303123???	09/01/2009 09:16:35	09/01/2009 18:03:06	09/01/2009 18:03:06	502			1	0	0	0	0		$ 0.00
Use 10-Trip Pass	Entry4	Ext3	0d 07h 42mi	Ext3		$ 4.80	$ -4.80	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
02994077017064288403136???	09/01/2009 11:06:34	09/01/2009 18:48:04	09/01/2009 18:48:04	502			1	0	0	0	0		$ 0.00
Use 10-Trip Pass	Entry4	Ext5	0d 09h 13mi	Ext5		$ 4.80	$ -4.80	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
02994077017064288203114???	09/01/2009 09:41:26	09/01/2009 18:54:05	09/01/2009 18:54:05	502			1	0	0	0	0		$ 0.00
Use 10-Trip Pass	Entry4	Ext3	0d 09h 37mi	Ext3		$ 4.80	$ -4.80	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
02994077017064290905817???	09/01/2009 09:18:45	09/01/2009 18:55:08	09/01/2009 18:55:08	502			1	0	0	0	0		$ 0.00
Use 10-Trip Pass	Entry5	Ext5	0d 09h 11mi	Ext5		$ 4.80	$ -4.80	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
02994077017064291608897???	09/01/2009 09:51:00	09/01/2009 19:02:52	09/01/2009 19:02:52	502			1	0	0	0	0		$ 0.00
Use 10-Trip Pass	Entry2	Ext2	0d 09h 38mi	Ext2		$ 4.80	$ -4.80	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
02994077017064288503147???	09/01/2009 09:25:30	09/01/2009 19:03:06	09/01/2009 19:03:06	509			1	0	0	0	0		$ 0.00
Use 10-Trip Pass	Entry9	Ext9	0d 09h 20mi	Ext9		$ 4.80	$ -4.80	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
02994077017064293009516???	09/01/2009 09:50:12	09/01/2009 19:10:36	09/01/2009 19:10:36	522			1	0	0	0	0		$ 0.00
Use 10-Trip Pass	Entry5	Ext5	0d 06h 42mi	Ext5		$ 4.80	$ -4.80	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
02994077017064295911035???	09/01/2009 14:21:45	09/01/2009 21:03:50	09/01/2009 21:03:50	502			1	0	0	0	0		$ 0.00
Use 10-Trip Pass	Entry5	Ext3	0d 04h 42mi	Ext3		$ 4.80	$ -4.80	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
02994077017064291708902???	09/01/2009 16:30:12	09/01/2009 21:12:08	09/01/2009 21:12:08	502			1	0	0	0	0		$ 0.00
Use 10-Trip Pass	Entry4	Ext3	0d 06h 38mi	Ext3		$ 4.80	$ -4.80	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
02994077017064296110355???	09/01/2009 14:34:00	09/01/2009 21:12:38	09/01/2009 21:12:38	502			1	0	0	0	0		$ 0.00
Use 10-Trip Pass	Entry4	Ext3	0d 07h 54mi	Ext3		$ 4.80	$ -4.80	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
02994077017064293058047???	09/01/2009 13:22:45	09/01/2009 21:16:27	09/01/2009 21:16:27	502			1	0	0	0	0		$ 0.00

For each revenue reduction article, the report starts on a new page, showing the article text followed by the unique article #.

At the end a summary is provided. Due to the possibility of multiple validations, only the Revenue Reduction Amount is shown.

3.2.5 Description of each column

For each shift, two rows will appear to show the required information.

Ref.	Column Header	Content
A(1)	Discounted Article Ticket ID	This column shows the name of the processed access media for which a discount was given. This is the same textual description as in the settlement
A(2)	EPAN	Unique Ticket ID of discounted article.
B(1)	Device	Name of entry device
B(2)	Entry –Date Time	Time stamp of entry transaction
C(1)	Device	Name of exit device
C(2)	Exit –Date Time	Time stamp of exit transaction
D(1)	Length Of Stay	Calculated length of stay
D(2)	Booking TimeStamp	Exact time stamp when discount was granted
E(1)	Cashier Name	Cashier who processed the discount.
E(2)	Shift #	Shift number in which discount was processed
F	Gross Revenue	This is the calculated gross revenue for the parking ticket.
G	Current Reduction	Total Amount deducted by the currently evaluated type of revenue reduction (Sample page 1 - article 901/1 Sample page 2 - article 901/6) The second line shows the number of reductions.
H	Other Coupons	In case of multiple reductions within this transaction, the amount deducted by coupons (i.e. Money Coupon) and count is shown here
I	Other Validations	In case of multiple reductions within this transaction, the amount deducted by validations (i.e. Rate Switch) and count is shown here
J	ISF used	In case of an Insufficient Fund reduction within this transaction, the amount deducted and count is shown here
K	Other Reduction	If reductions apply which do not fit into the above mentioned categories, they will be listed here
L	Net	This is the calculated Net Revenue for this

Ref.	Column Header	Content
		transaction. L = F-G–H–I–J-K
M	Credit	Payment made with Credit Card (or Cashless)
N	Cash	Payment made with cash

3.3 Exception Transaction Report

3.3.1 Short Description

This report only focuses on Exception Transactions. It will list several details such as Epan, Cashier, Device and Time stamps, etc.

In case of Cancellations the term “Cancelled Transaction” is used. It then lists the next transaction in sequence, which may help identify a cashiers misuse of the system.

Some of the transactions are marked with colors for easier identification. The following colors are used:

- Red – Revenue Reduction
- Green – Next transaction in sequence is listed (after Cancellation)

This report can be pulled either Time-based, or Shift-based.

When selecting Shift-based, an additional line per shift is displayed on top, giving details about the shift. The output is sorted by shift number, device and time stamp in which the Exception was processed (Booking Time Stamp). A summary is provided at the end of each shift. The next shift in sequence will start on a new page.

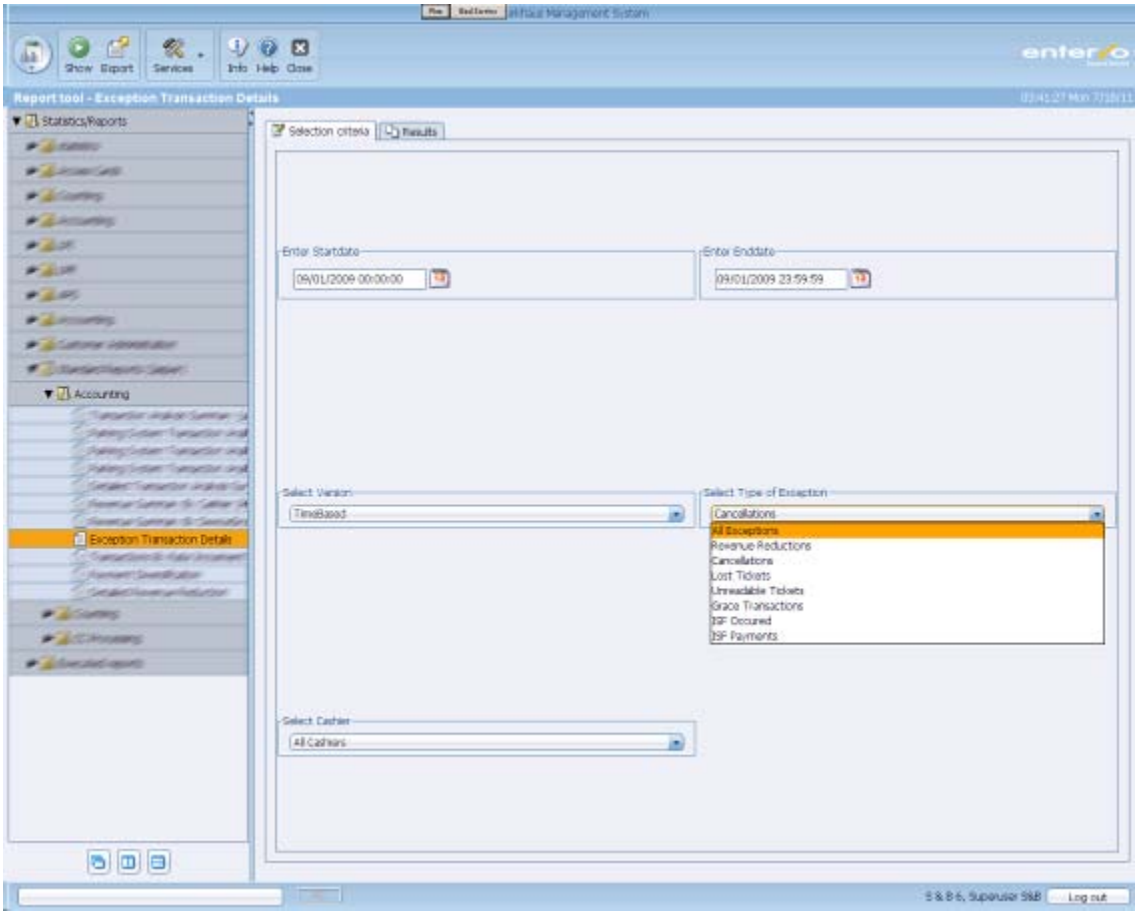
When selecting Time-based, the report lists all transactions sorted by device and time stamp when the exception was processed (Booking Time Stamp).

For both options, a Grand Total is provided at the end of the report.

3.3.2 Source Data

The report is based on payment transactions (and shift closure information when pulled Shiftbased.

3.3.3 Pre-selection Screen



The Pre-selection Screen offers the following options:

- **Start Date**
  Enter the exact time stamp in which the evaluation starts
- **End Date (must be greater than Start Date)**
  Enter the exact time stamp in which the evaluation ends
- **Version**
  - Shift-Based
  - Time-Based
- **Type of Exception Transaction**
  - All Exceptions
  - Revenue Reductions
  - Cancellations
  - Lost Tickets
  - Unreadable Tickets
  - Grace Transactions
  - ISF Occurred Transactions
  - ISF Payment Transactions
- **Cashier**
  - All Cashiers
  - A specific Cashier

3.3.4 Report Sample (2 Pages / Shift Based)

parking experts

Exception Transactions

StartDate: 09/01/2009 00:00:00
EndDate: 09/01/2009 23:59:59
Selected Version: ShiftBased
Selected Exception: All Exceptions
Selected Cashier: All Cashiers

Cashier Name / Epan	Shift # / Booking DateTime	Device	Entry DateTime / Exit DateTime	Device / Device	Article ID	Gross	Reduction	Net	Cash	Credit
Shift #	Device #	Device Name	Shiftstart		Shiftend	Cashiername				
549	803	ExCash3	08/31/2009 00:00:51		09/01/2009 00:01:25	ExCash 3				
02994077017011049242607190??		7017 / 803	08/30/2009 16:51:59	7017 / 104	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
	08/31/2009 00:36:23		08/31/2009 00:36:23	7017 / 803						
02994077017020004900001070??		7017 / 803	08/31/2009 07:30:58	7017 / 104	0 / 30200 Grace Access	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
	08/31/2009 09:23:51		08/31/2009 09:23:51	7017 / 803						
02994077017020000300178070??		7017 / 803	08/31/2009 08:57:32	7017 / 105	0 / 30200 Grace Access	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
	08/31/2009 09:28:46		08/31/2009 09:28:46	7017 / 803						
02994077017011049243310340??		7017 / 803	08/31/2009 08:37:14	7017 / 104	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
	08/31/2009 09:54:55		08/31/2009 09:54:55	7017 / 803						
02994077017011029243339160??		7017 / 803	08/31/2009 09:25:16	7017 / 102	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
	08/31/2009 10:15:08		08/31/2009 10:15:08	7017 / 803						
02994077017011029243329240??		7017 / 803	08/31/2009 09:08:44	7017 / 102	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
	08/31/2009 10:23:15		08/31/2009 10:23:15	7017 / 803						
02994077017011049243356290??		7017 / 803	08/31/2009 09:53:49	7017 / 104	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
	08/31/2009 10:25:18		08/31/2009 10:25:18	7017 / 803						
02994077017011049243367420??		7017 / 803	08/31/2009 10:12:22	7017 / 104	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
	08/31/2009 10:40:52		08/31/2009 10:40:52	7017 / 803						
02994077017011049243352350??		7017 / 803	08/31/2009 09:47:15	7017 / 104	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
	08/31/2009 10:49:00		08/31/2009 10:49:00	7017 / 803						
02994077017011049243369090??		7017 / 803	08/31/2009 10:15:09	7017 / 104	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
	08/31/2009 10:49:32		08/31/2009 10:49:32	7017 / 803						
02994077017011049243365650??		7017 / 803	08/31/2009 10:09:25	7017 / 104	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
	08/31/2009 10:52:57		08/31/2009 10:52:57	7017 / 803						
02994077017020001500457070??		7017 / 803	08/31/2009 07:36:29	7017 / 104	0 / 30200 Grace Access	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
	08/31/2009 10:58:30		08/31/2009 10:58:30	7017 / 803						
02994077017020000300258070??		7017 / 803	08/31/2009 06:56:01	7017 / 105	0 / 30200 Grace Access	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
	08/31/2009 10:58:39		08/31/2009 10:58:39	7017 / 803						

Page : 1 / 220 Exception Transactions 1.0.0 Printed : 07/18/2011 04:49:53

Cashier Name / Epan	Shift # / Booking DateTime	Device	Entry DateTime / Exit DateTime	Device / Device	Article ID	Gross	Reduction	Net	Cash	Credit
02994077017011049243371720??		7017 / 803	08/31/2009 10:19:32	7017 / 104	0 / 10137 Eval 10137	$ 3.00	$ -3.00	$ 0.00	$ 0.00	$ 0.00
	08/31/2009 11:01:31		08/31/2009 11:01:31	7017 / 803						
N/A			901 / 13137 Val 13137				$ -3.00			
02994077017011049243356740??		7017 / 803	08/31/2009 09:54:34	7017 / 104	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
	08/31/2009 11:07:47		08/31/2009 11:07:47	7017 / 803						
02994077017011029243355620??		7017 / 803	08/31/2009 09:52:42	7017 / 102	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
	08/31/2009 11:09:50		08/31/2009 11:09:50	7017 / 803						
02994077017011049243368330??		7017 / 803	08/31/2009 10:13:53	7017 / 104	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
	08/31/2009 11:15:30		08/31/2009 11:15:30	7017 / 803						
02994077017011049243384340??		7017 / 803	08/31/2009 10:40:34	7017 / 104	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
	08/31/2009 11:16:50		08/31/2009 11:16:50	7017 / 803						
02994077017011049243363640??		7017 / 803	08/31/2009 10:06:04	7017 / 104	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
	08/31/2009 11:23:10		08/31/2009 11:23:10	7017 / 803						
02994077017020001500354070??		7017 / 803	08/31/2009 09:54:28	7017 / 104	0 / 30200 Grace Access	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
	08/31/2009 11:24:29		08/31/2009 11:24:29	7017 / 803						
02994077017011049243396290??		7017 / 803	08/31/2009 11:00:29	7017 / 104	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
	08/31/2009 11:25:22		08/31/2009 11:25:22	7017 / 803						
02994077017011049243383630??		7017 / 803	08/31/2009 10:39:23	7017 / 104	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
	08/31/2009 11:26:58		08/31/2009 11:26:58	7017 / 803						
02994077017011049243352950??		7017 / 803	08/31/2009 09:48:15	7017 / 104	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
	08/31/2009 11:34:39		08/31/2009 11:34:39	7017 / 803						
02994077017011059243383090??		7017 / 803	08/31/2009 10:38:29	7017 / 105	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
	08/31/2009 11:36:25		08/31/2009 11:36:25	7017 / 803						
02994077017011049243377350??		7017 / 803	08/31/2009 10:28:55	7017 / 104	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
	08/31/2009 11:43:01		08/31/2009 11:43:01	7017 / 803						
02994077017011049243387890??		7017 / 803	08/31/2009 10:46:29	7017 / 104	0 / 10137 Eval 10137	$ 3.00	$ -3.00	$ 0.00	$ 0.00	$ 0.00
	08/31/2009 11:46:52		08/31/2009 11:46:52	7017 / 803						
N/A			901 / 13137 Val 13137				$ -3.00			
02994077017011059243413080??		7017 / 803	08/31/2009 11:28:28	7017 / 105	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
	08/31/2009 11:48:13		08/31/2009 11:48:13	7017 / 803						
02994077017011039243363530??		7017 / 803	08/31/2009 10:05:53	7017 / 103	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
	08/31/2009 11:48:39		08/31/2009 11:48:39	7017 / 803						
02994077017011049243404160??		7017 / 803	08/31/2009 11:13:36	7017 / 104	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
	08/31/2009 11:56:50		08/31/2009 11:56:50	7017 / 803						
02994077017011049243384110??		7017 / 803	08/31/2009 10:40:11	7017 / 104	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.00
	08/31/2009 11:59:40		08/31/2009 11:59:40	7017 / 803						

For each shift the report starts on a new page, showing details such as shift number, the Device ID and Device name, time stamps of shift start and shift end and the Cashiers name (could also be the device name when running unoccupied) on top.

At the end of each shift a Shift Summary is provided.

Report Sample (2 Pages / Time Based)

parking experts

Exception Transactions

StartDate: 09/01/2009 00:00:00
EndDate: 09/01/2009 23:59:59
Selected Version: TimeBased
Selected Exception: All Exceptions
Selected Cashier: All Cashiers

Cashier Name / Epan	Shift # / Booking DateTime	Device	Entry DateTime / Exit DateTime	Device / Device	Article ID	Gross	Reduction	Net	Cash	Credit
Exit5	**501**	7017 / 205	08/31/2009 15:11:45	7017 / 105	0 / 30200 Grace Access	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017020000890000890????	09/01/2009 00:05:28		09/01/2009 00:05:28	7017 / 205						
Exit3	**501**	7017 / 203	08/31/2009 15:53:46	7017 / 104	0 / 30200 Grace Access	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017020000308630????	09/01/2009 00:12:39		09/01/2009 00:12:39	7017 / 203						
Exit2	**508**	7017 / 202	08/31/2009 23:19:00	7017 / 202	0 / 30200 Grace Access	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017020000301174070????	09/01/2009 00:20:34		08/31/2009 23:19:07	7017 / 803						
Exit9	**521**	7017 / 209	08/31/2009 16:01:16	7017 / 109	0 / 30200 Grace Access	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017020006650000107????	09/01/2009 00:31:17		09/01/2009 00:31:17	7017 / 209						
Exit9	**521**	7017 / 209	09/01/2009 00:24:02	7017 / 106	0 / 30200 Grace Access	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017020000301174070????	09/01/2009 00:41:19		09/01/2009 00:41:19	7017 / 209						
Exit6	**502**	7017 / 206	09/01/2009 01:14:41	7017 / 102	0 / 30200 Grace Access	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017020000301174070????	09/01/2009 01:46:43		09/01/2009 01:46:43	7017 / 206						
Exit5	**502**	7017 / 205	09/01/2009 02:35:33	7017 / 104	0 / 30200 Grace Access	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017020000301174070????	09/01/2009 03:11:00		09/01/2009 03:11:00	7017 / 205						
Exit9	**522**	7017 / 209	09/01/2009 03:20:49	7017 / 106	0 / 30200 Grace Access	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017020000301174070????	09/01/2009 03:45:52		09/01/2009 03:45:52	7017 / 209						
Exit2	**509**	7017 / 202	09/01/2009 00:42:56	7017 / 105	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017011059244025760??	09/01/2009 04:15:09		09/01/2009 04:15:09	7017 / 202						
Exit6	**503**	7017 / 206	09/01/2009 04:14:52	7017 / 109	0 / 30200 Grace Access	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017020000301174070????	09/01/2009 04:50:59		09/01/2009 04:50:59	7017 / 206						
Exit5	**502**	7017 / 205	08/31/2009 20:09:03	7017 / 105	0 / 30200 Grace Access	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017020001505051800????	09/01/2009 06:45:22		09/01/2009 06:45:22	7017 / 205						
Exit4	**503**	7017 / 204	09/01/2009 05:24:16	7017 / 109	0 / 30200 Grace Access	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017020000301174070????	09/01/2009 06:53:08		09/01/2009 06:53:08	7017 / 204						
Exit3	**502**	7017 / 203	09/01/2009 07:08:36	7017 / 105	0 / 30200 Grace Access	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017020000301174070????	09/01/2009 08:07:39		09/01/2009 08:07:39	7017 / 203						
ExCash3	**550**	7017 / 803	09/01/2009 08:25:35	7017 / 104	0 / 30200 Grace Access	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017020004700000107????	09/01/2009 08:28:17		09/01/2009 08:28:17	7017 / 803						

Page : 1 / 205 — Exception Transactions 1.0.0 — Printed : 07/18/2011 04:54:14

Cashier Name / Epan	Shift # / Booking DateTime	Device	Entry DateTime / Exit DateTime	Device / Device	Article ID	Gross	Reduction	Net	Cash	Credit
Exit3	**502**	7017 / 203	09/01/2009 08:17:09	7017 / 104	0 / 30200 Grace Access	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017020000300260077??	09/01/2009 08:30:02		09/01/2009 08:30:02	7017 / 203						
Exit2	**509**	7017 / 202	09/01/2009 08:27:09	7017 / 102	0 / 30100 Lagtime Ticket	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017011029244304290??	09/01/2009 08:30:10		09/01/2009 08:30:10	7017 / 202						
Exit9	**522**	7017 / 209	09/01/2009 08:08:17	7017 / 109	0 / 10138 Eval 10138	$ 3.00	$ -3.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017011099244292970??	09/01/2009 08:41:41		09/01/2009 08:41:41	7017 / 209						
N/A					901 / 13138 Val 13138		$ -3.00			
Exit5	**502**	7017 / 205	09/01/2009 08:45:13	7017 / 105	0 / 30100 Lagtime Ticket	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017011059244315130??	09/01/2009 08:46:52		09/01/2009 08:46:52	7017 / 205						
ExCash3	**550**	7017 / 803	09/01/2009 07:57:58	7017 / 105	0 / 10604 Use 10-Trip Pass	$ 4.80	$ -4.80	**$ 0.00**	$ 0.00	$ 0.00
02994077017064296110354777??	09/01/2009 08:48:12		09/01/2009 08:48:12	7017 / 803						
N/A					901 / 60400 604 Card		$ -4.80			
Exit5	**502**	7017 / 205	09/01/2009 08:19:54	7017 / 105	0 / 30200 Grace Access	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017020000300034077??	09/01/2009 08:52:10		09/01/2009 08:52:10	7017 / 205						
Exit5	**502**	7017 / 205	09/01/2009 08:00:25	7017 / 102	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017011029244286250??	09/01/2009 08:54:55		09/01/2009 08:54:55	7017 / 205						
Exit3	**502**	7017 / 203	09/01/2009 08:23:39	7017 / 104	0 / 30200 Grace Access	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017020000301174077??	09/01/2009 08:58:14		09/01/2009 08:58:14	7017 / 203						
Exit5	**502**	7017 / 205	09/01/2009 07:00:57	7017 / 105	0 / 30200 Grace Access	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017020000300289077??	09/01/2009 09:02:04		09/01/2009 09:02:04	7017 / 205						
ExCash3	**550**	7017 / 803	09/01/2009 06:23:40	7017 / 105	0 / 30200 Grace Access	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017020003400004077??	09/01/2009 09:04:16		09/01/2009 09:04:16	7017 / 803						
Exit2	**509**	7017 / 202	09/01/2009 07:42:03	7017 / 103	0 / 30099 GraceTime Ticket	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017011039244277230??	09/01/2009 09:08:39		09/01/2009 09:08:39	7017 / 202						
Exit4	**503**	7017 / 204	09/01/2009 09:09:28	7017 / 105	0 / 30100 Lagtime Ticket	$ 0.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017011059244329680??	09/01/2009 09:11:54		09/01/2009 09:11:54	7017 / 204						
Exit9	**522**	7017 / 209	09/01/2009 07:17:11	7017 / 109	0 / 10138 Eval 10138	$ 3.00	$ -3.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017011099244262310??	09/01/2009 09:14:16		09/01/2009 09:14:16	7017 / 209						
N/A					901 / 13138 Val 13138		$ -3.00			
Exit6	**503**	7017 / 206	09/01/2009 08:34:59	7017 / 106	0 / 10138 Eval 10138	$ 3.00	$ -3.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017011069244308990??	09/01/2009 09:15:28		09/01/2009 09:15:28	7017 / 206						
N/A					901 / 13138 Val 13138		$ -3.00			
Exit3	**502**	7017 / 203	09/01/2009 08:08:51	7017 / 104	0 / 10138 Eval 10138	$ 3.00	$ -3.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017011049244293310??	09/01/2009 09:19:23		09/01/2009 09:19:23	7017 / 203						
N/A					901 / 13138 Val 13138		$ -3.00			

3.3.5 Report Sample (3 Pages / Cancellations)

parking experts

Exception Transactions

StartDate: 09/01/2009 00:00:00
EndDate: 09/01/2009 23:59:59
Selected Version: TimeBased
Selected Exception: Cancellations
Selected Cashier: All Cashiers

Cashier Name / Epan	Shift # / Booking DateTime	Device	Entry DateTime / Exit DateTime	Device / Device	Article ID	Gross	Reduction	Net	Cash	Credit
Cashier 29	**627**	7017 / 701	N/A	N/A	0 / 11100 Valet Charge	$ 4.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
N/A	09/01/2009 11:35:02		N/A	N/A						
Cancelled Transaction										
02994077017011049244380150??	09/01/2009 11:40:06	7017 / 701	09/01/2009 10:33:35 09/01/2009 11:41:14	7017 / 104 7017 / 203	0 / 10100 Paid Ticket	$ 7.00	$ 0.00	**$ 7.00**	$ 7.00	$ 0.00
Cashier 1	**1973**	7017 / 801	09/01/2009 12:59:50	7017 / 103	0 / 10100 Paid Ticket	$ 3.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017011039244467900??	09/01/2009 14:09:20		N/A	N/A						
Cancelled Transaction										
02994077017011029244461480??	09/01/2009 14:10:04	7017 / 801	09/01/2009 12:49:08 N/A	7017 / 102 N/A	0 / 10100 Paid Ticket	$ 3.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
Cancelled Transaction										
Cashier 1	**1973**	7017 / 801	09/01/2009 12:49:08	7017 / 102	0 / 10100 Paid Ticket	$ 3.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017011029244461480??	09/01/2009 14:10:04		N/A	N/A						
Cancelled Transaction										
02994077017011029244416920??	09/01/2009 14:10:19	7017 / 801	09/01/2009 11:34:00 N/A	7017 / 801 N/A	0 / 10100 Paid Ticket	$ 5.00	$ 0.00	**$ 5.00**	$ 5.00	$ 0.00
Cashier 21	**882**	7017 / 802	09/01/2009 13:49:49	7017 / 102	0 / 10100 Paid Ticket	$ 3.00	$ -3.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017011029244497890??	09/01/2009 14:55:38		09/01/2009 14:55:43	7017 / 802						
Cancelled Transaction										
02994077017011029244497890??	09/01/2009 14:55:54	7017 / 802	09/01/2009 13:49:00 N/A	7017 / 802 N/A	0 / 10100 Paid Ticket	$ 3.00	$ 0.00	**$ 3.00**	$ 0.00	$ 3.00
Cashier 21	**882**	7017 / 802	09/01/2009 10:30:00	7017 / 802	0 / 104 Unreadable ticket	$ 14.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017018029245496??	09/01/2009 15:17:41		N/A	N/A						
Cancelled Transaction										
02994077017018029244550930??	09/01/2009 15:18:13	7017 / 802	09/01/2009 09:00:00 09/01/2009 15:17:59	7017 / 802 7017 / 802	0 / 104 Unreadable ticket	$ 9.00	$ 0.00	**$ 9.00**	$ 0.00	$ 9.00
Cashier 20	**1972**	7017 / 801	09/01/2009 15:35:45	7017 / 105	0 / 10100 Paid Ticket	$ 3.00	$ 0.00	**$ 0.00**	$ 0.00	$ 0.00
02994077017011059244561450??	09/01/2009 15:45:02		09/01/2009 15:51:30	7017 / 202						
Cancelled Transaction										
02994077017011029244538500??	09/01/2009 15:47:15	7017 / 801	09/01/2009 14:57:00 N/A	7017 / 801 N/A	0 / 10100 Paid Ticket	$ 3.00	$ 0.00	**$ 3.00**	$ 3.00	$ 0.00

Page : 1 / 3 — Exception Transactions 1.0.0 — Printed : 07/18/2011 04:56:25

3.3.6 Description of each column

For each shift, two rows will appear to show the required information. In case of a cancelled transaction, the next transaction in sequence will be shown marked in green.

Ref.	Column Header	Content
A(1)	Cashier Name	Name of Cashier who processed this transaction. Can also be the name of the device if it was run unoccupied
A(2)	EPAN	If transaction was cancelled the text "Cancelled Transaction" will appear below the EPAN
B(1)	Shift #	If pulled Time-based this is the shift id in which the transaction was processed. If pulled Shift-based this field is empty. The shift number is shown on top and remains until the last transaction of the shift has been listed.
B(2)	Booking TimeStamp	Exact time stamp when transaction was processed
C(1)	Device	Device number / Cell computer number where transaction was processed
D(2)	Entry –Date Time	Time stamp of entry transaction
D(2)	Exit –Date Time	Time stamp of exit transaction
E(1)	Device	Device number / Cell computer number of entry
E(2)	Device	Device number / Cell computer number of exit
E(1)	Cashier Name	Cashier who processed the discount.
F(1)	Article ID	Article Id and description as it is used in the Settlement
G	Gross	This is the calculated gross revenue for the parking ticket.
H	Reduction	Total Amount deducted.
I	Net	Calculated Net Revenue
I	Cash	Amount paid in Cash
J	Credit	Amount paid in Credit (or Cashless)

3.4 Exception Transaction Details

3.4.1 Short Description

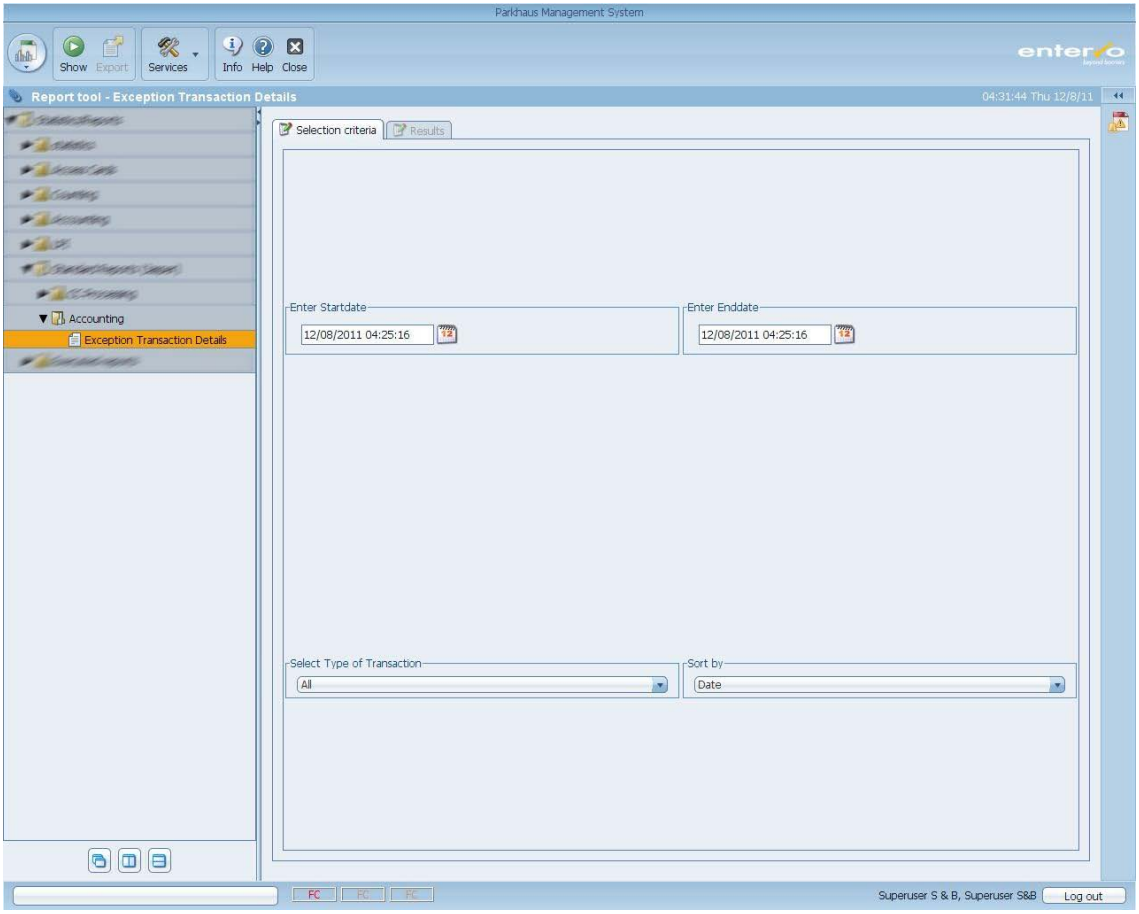
Other than the previously discussed Exception Transaction report will it list detailed data which was taken by the system operators (cashiers, supervisors, etc…) while processing an Exception Transaction.

Details such as personal data of the patron, transactional data and (if applicable and available) details on the replaced access media (i.e. “The Lost Ticket”) are provided.

3.4.2 Source Data

The report is based on detailed exception transaction data and can only be pulled Time-based.

3.4.3 Pre-selection Screen



The Pre-selection Screen offers the following options:

- **Start Date**
  Enter the exact time stamp in which the evaluation starts

- **End Date (must be greater than Start Date)**
  Enter the exact time stamp in which the evaluation ends

- **Type of Exception Transaction**
  - All Exceptions
  - Lost Tickets
  - Unreadable Tickets

- **SortOrder**
  - Date
  - Patron's Last Name
  - TransactionID

3.4.4 Report Sample

Exception Transaction Details

Selected Startdate : *12/08/2011 09:00:00*
Selected Enddate : *12/08/2011 09:31:43*
Type of Transaction *All*
Order by *Date*

Timestamp of Exception	*Transaction ID*	*Type of Transaction*	*Device/Computer*	*Operator*	
Exit Epan (Replacement)	*Timstamp of Entry*	*Replaced Epan*			*Gross Revenue*
Lastname	*Firstname*	*Date of Birth*	*Street*	*City*	*Zip*
License Plate	*State*	*Drivers License*	*Issued At*		
12/08/2011 09:09:02	**688**	**Lost**	601 / 8228	Superuser S & B	
N/A	**N/A**	N/A			$ 27,50
Surname	Firstname	01.01.2000	Breitestr. 132	Mönchengladbach	41238
MG-SB	N/A	00000000000	N/A		
12/08/2011 09:10:20	**690**	**Unreadable**	601 / 8228	Superuser S & B	
N/A	**N/A**	N/A			$ 37,50
UNKNOWN	UNKNOWN	-	-	-	-
MG2222	N/A	-	N/A		

3.4.5 Description of each Column

Ref.	Column Header	Content
Transactional Information		
A(1)	Timestamp of Exception	Exact timestamp when the Exception was processed
B(1)	Transaction ID	Unique Trabsaction ID generated by the system
C(1)	Type Of Transaction	Textual description of the transaction type
D(1)	Device / Computer	Identifies at which device the transaction was processed
E(1)	Operator	Identifies the operator, who handled this transaction
F(2)	-	N/A (future usage)
Access Media and Sales Information		
A(2)	Exit Epan	If the system has issued a physical ticket which the Patron then uses at the exit to leave the facility, the produced Epan will be shown here.
B(2)	Timestamp of Entry	If the system can link the license plate number of the current Exception Transaction to the license plate of the entry, the exact Entry Timestamp will be shown. Only available in LPR systems
C(2)	Replaced Epan	If the system can link the license plate number of the current Exception Transaction to the license plate of the entry, the exact Epan of the Entry Transaction will be shown. Only available in LPR systems
D(2)	-	N/A (future usage)
E(2)	-	N/A (future usage)
F(2)	Gross Revenue	Gross Revenue Amount for this Exception Transaction
Patron's Personal information (if collected)		
A(3)	Last Name	Last name
B(3)	First Name	Fist name
C(3)	Date of Birth	Date of Birth
D(3)	Street	Street
E(3)	City	City
F(3)	Zip	Zip
A(4)	License Plate	License Plate number

B(4)	State	License Plate State
C(4)	Driver's License	Driver's License Number
D(4)	Issued at	State, Driver's license was issued
E(4)	-	N/A (future usage)
F(4)	-	N/A (future usage)

3.5 Cashier Performance Report

3.5.1 Short Description

This report shows the amounts and counts of Exception Transactions processed by cashiers. It provides an immediate overview if a cashiers transaction amount or count is below or above the average of all cashiers, by comparing each cashier's transactions to the average of all transactions of all cashiers for the same timeframe.

Currently the following Exception Transactions are supported:

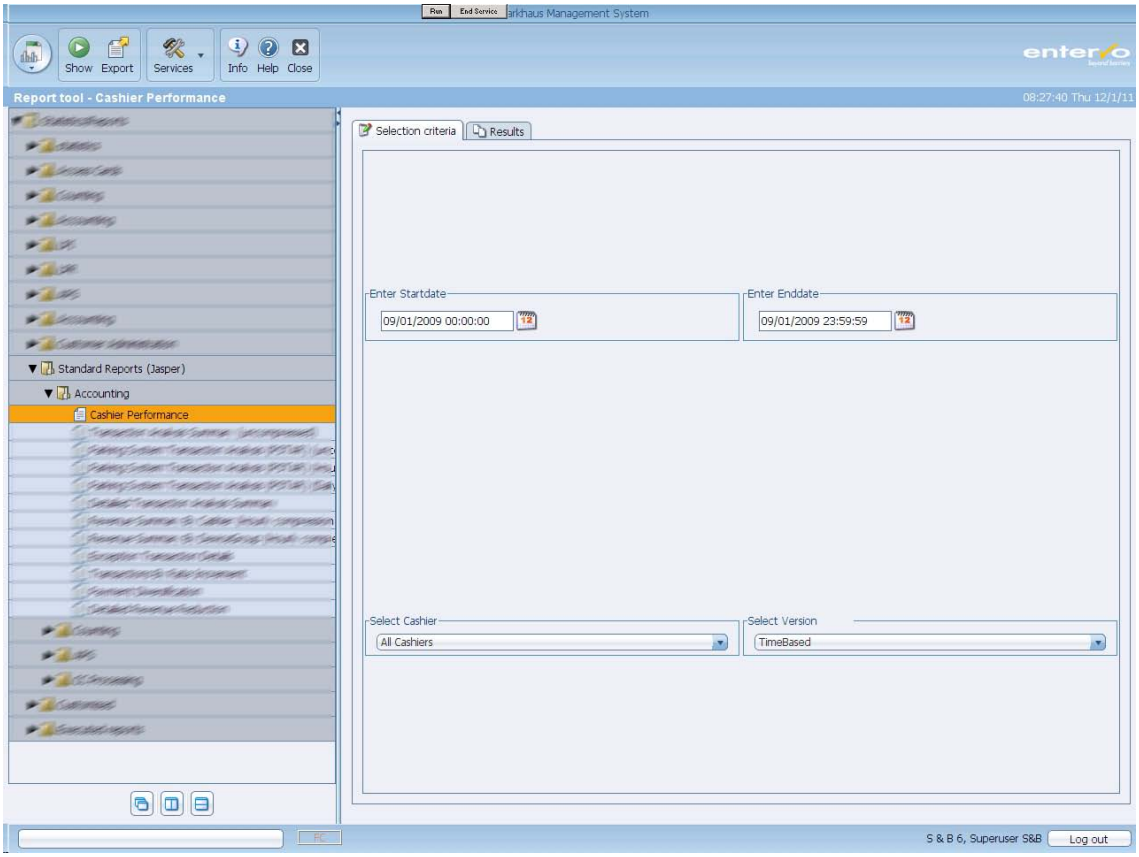
- Lost Tickets Transactions
- Unreadable Tickets Transactions
- Cancellations
- Manual Credit Card Number inputs
- ISF Payments
- Paid ISF Payments
- Processed Validations
- Processed Coupons
- Towed Vehicle Transactions
- Special Income Transactions
- Special Expense Transactions

It is meant to be a support tool for cashier auditing purposes. This report can be pulled either Time-based, or Shift-based. For each cashier the report will start on a new page.

3.5.2 Source Data

The report is based on payment transactions (and shift closure information when pulled Shiftbased) which are collected during the night.

3.5.3 Pre selection Screen



The Pre-selection Screen offers the following options:

- **Start Date**
  Enter the exact time stamp in which the evaluation starts

- **End Date (must be greater than Start Date)**
  Enter the exact time stamp in which the evaluation ends

- **Cashier**
  - All Cashiers
  - A specific Cashier

- **Version**
  - Shift-Based
  - Time-Based

3.5.4 Report Sample

CashierPerformance Report

Selected StartDate: 09/01/2009 00:00:00
Selected EndDate: 09/01/2009 23:59:59
Selected Cashier: All
Selected Version: TimeBased

Cashier 2

	Revenue	Avg.Revenue All	Over/Short	Quantity	Avg.Quantity All	Over/Short	Avg.Trans.Amount	Avg.Trans.Amount All	Over/Short
Gross	$ 4,228.00	($ 1,141.50)	$ 3,086.50	60	214	-154	$ 70.46	$ 5.34	$ 65.12
Net	$ 4,228.00	($ 1,117.25)	$ 3,110.75	60	179	-119	$ 70.46	$ 6.24	$ 64.22
Cash	$ 1,380.00	($ 705.50)	$ 674.50	21	156	-135	$ 65.71	$ 4.53	$ 61.17
Exceptions	$ 0.00	($ 66.25)	$ -66.25	0	17	-17	$ 0.00	$ 4.01	$ -4.01
Lost Tickets	$ 0.00	($ 7.87)	$ -7.87	0	1	-1	$ 0.00	$ 9.00	$ -9.00
Unreadable Tickets	$ 0.00	($ 33.25)	$ -33.25	0	8	-8	$ 0.00	$ 4.15	$ -4.15
Cancellations	$ 0.00	($ 6.12)	$ -6.12	0	2	-2	$ 0.00	$ 3.06	$ -3.06
Manual CC# Input	$ 0.00	($ 1.12)	$ -1.12	0	0	0	$ 0.00	$ 3.00	$ -3.00
ISF occurred	$ 0.00	($ 0.37)	$ -0.37	0	0	0	$ 0.00	$ 3.00	$ -3.00
Paid ISF	$ 0.00	($ 0.00)	$ 0.00	0	0	0	$ 0.00	$ 0.00	$ 0.00
Validations	$ 0.00	($ 10.37)	$ -10.37	0	3	-3	$ 0.00	$ 3.32	$ -3.32
Coupons	$ 0.00	($ 7.12)	$ -7.12	0	2	-2	$ 0.00	$ 3.56	$ -3.56
Towed Vehicle	$ 0.00	($ 0.00)	$ 0.00	0	0	0	$ 0.00	$ 0.00	$ 0.00
Special Income	$ 0.00	($ 0.00)	$ 0.00	0	0	0	$ 0.00	$ 0.00	$ 0.00
Special Expenses	$ 0.00	($ 0.00)	$ 0.00	0	0	0	$ 0.00	$ 0.00	$ 0.00

Page : 1 / 8 CashierPerformance Report 1.0.0 Printed :12/01/2011 06:09:51

3.5.5 Description of each Column

Ref.	Column Header	Content
	Cashier	Cashier name whos transactions are compared.
A	Execption Transaction Type	Type of transaction being evaluated
B	Avg.Revenue	Revenue which was made, or could have been made with this type of transaction. **Note: All Revenues are represented with a positive sign (+).**
C	Avg.Revenue All	Average revenue for this type of transaction of all cashiers.
D	Overshort	Displays if the cashier performed better (green) or worse (red) than the average of all cashiers
E	Quantity	Quantity of this type of transaction
F	Avg. Quantity All	Average Quantity of this type of transaction of all cahiers
G	Overshort	Displays if the cashier performed better (green) or worse (red) than the average of all cashiers
H	Avg Transaction Amount	Average Amount of this transaction of this cashier
I	Avg Transaction Amount All	Average Amount of this transaction of all cashiers
J	Overshort	Displays if the cashier performed better (green) or worse (red) than the average of all cashiers

4 APS Reports

4.1 Time To Exit

This report is provided as a tool to assist in determining if the Grace Time assigned after paying at an APS is reasonable and sufficient.

4.1.1 Short Description

This report provides information about how much time patrons need to exit the facility after their last payment at an APS.

Last Payment at APS samples :

1) A patron pays at an APS and exits without further payment.

2) A patron pays at an APS, exceeds his granted grace time and pays additionally at an Exit Verifier or Exit Cashier Station and exits.

3) A patron pays at an APS, exceeds his granted grace time and pays additionally at an APS and exits. In this case, only the 2nd payment is used for the calculation of the exit time.

Depending on the final payment process, you will see different booking articles for these samples in the Settlement report.

The time grid used is pre-defined and cannot be changed. The first 60 minutes are detailed. Every transaction beyond 60 minutes is summed up in the “60-9999 mins” row.

For correct calculation of the minutes between the last payment and the exit, the following rules apply:

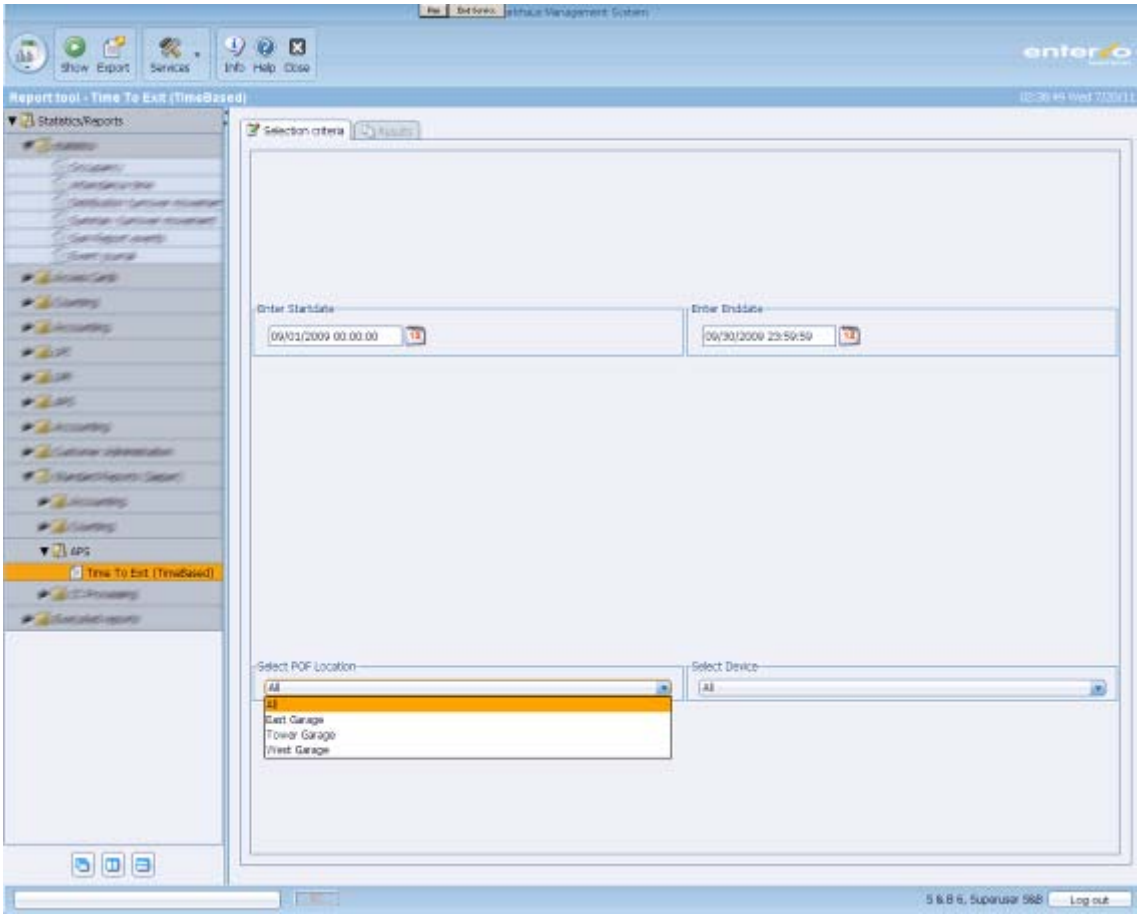
Last Payment at APS	Exit Time	Lag Time	Rule	Category
12:00:02	12:05:10	12:05:10 – 12:00:00 = 00:05:10	5 < 5 min 10 sec <= 6 minutes	5 to 6 min.
12:00:32	12:05:10	12:05:10 – 12:00:00 = 00:05:10	5 < 5 min 10 sec <= 6 minutes	5 to 6 min.
12:00:02	12:06:00	12:06:00 – 12:00:00 = 00:06:00	5 < 6 min<= 6 minutes	5 to 6 min.
12:00:32	12:06:10	12:06:10 – 12:00:00 = 00:06:10	6 < 6 min 10 sec.<= 7 minutes	6 to 7 min.

Please note: The seconds in the time stamp of the last Payment at APS are cut off. This is the same rule as used in the tariff calculation process of entervo.

4.1.2 Source Data

This report is based on payment transactions and can only be pulled Time-Based.

4.1.3 Pre selection Screen



The Pre-selection Screen offers the following options:

- **Start Date**

  Enter the exact time stamp in which the evaluation starts
- **End Date (must be greater than Start Date)**

  Enter the exact time stamp in which the evaluation ends
- **APS (=POF) Location**

  Select the Facility where the APS is located. It is also possible to get a facility-wide overview by selecting “All”. You will then still get a facility related overview, but all facilities known are listed in one output (see sample)
- **Select Device**

  Option to evaluate only payments made at the selected APS.

4.1.4 Report Sample

Time To Exit (Timebased)

Selected Startdate: 09/01/2009 00:00:00
Selected Enddate: 10/01/2009 23:59:58
Selected POF Location: All
Selected POF: All

POF Loc. –> Mins. To Exit	EG (1019)	TG (1017)	WG (1018)	Total
00 - 01		1	16	17
01 - 02	497	460	1760	2757
02 - 03	4946	4646	6770	16560
03 - 04	6060	9262	6533	23865
04 - 05	6667	7099	3666	16551
05 - 06	2632	4020	2031	8883
06 - 07	1406	2252	1027	4687
07 - 08	726	1216	686	2628
08 - 09	376	679	360	1417
09 - 10	194	387	245	826
10 - 11	119	242	136	497
11 - 12	73	167	88	328
12 - 13	44	121	66	231
13 - 14	34	58	47	139
14 - 15	20	46	34	99
15 - 16	16	31	31	78
16 - 17	16	26	22	62
17 - 18	6	21	16	44
18 - 19	10	16	12	38
19 - 20	2	17	11	30
20 - 21	3	5	2	10
21 - 22	3	6	4	13
22 - 23	3	3	2	8
23 - 24	5	2	2	9
24 - 25	2	3	5	10
25 - 26	1	3	3	7
26 - 27	1	1	2	4
27 - 28	2	3	2	7
28 - 29	1		3	4
29 - 30	2	3	3	8
30 - 31		1		1
31 - 32				
32 - 33		1		1
33 - 34		1	2	3
34 - 35			1	1
35 - 36		1	2	3
36 - 37	1	1		2
37 - 38	2	1	1	4
38 - 39			1	1
39 - 40	1		2	3
40 - 41				
41 - 42	1	2	2	5
42 - 43	1	1		2
43 - 44	1			1
44 - 45				
45 - 46				
46 - 47	1			1
47 - 48		4		4
48 - 49				
49 - 50				
50 - 51	1	2	1	4
51 - 52				
52 - 53	1			1
53 - 54	1	1		2
54 - 55	1			1
55 - 56				
56 - 57				
57 - 58			1	1
58 - 59	1			1
59 - 60				
60 - 9999	11	22	8	41
Total	25004	31070	23726	79800

Page : 1 / 1 Time To Exit (Timebased) V1.0.0

This report extends dynamically to the right depending on the number of facilities containing APS devices.

4.1.5 Description of each column

Ref.	Column Header	Content
A(1)	APS (POF) Location	Facility where APS used for payment is located.
A(2)	Mins To Exit (Time Grid)	Time grid in minutes, in which the transactions are sorted. If a patron exceeds 60 minutes, the transaction will be counted in the “60-9999” minutes row.
B	Facility Name and ID	Abbreviated facility name and ID where APS used for payment is located.

4.2 APS Status

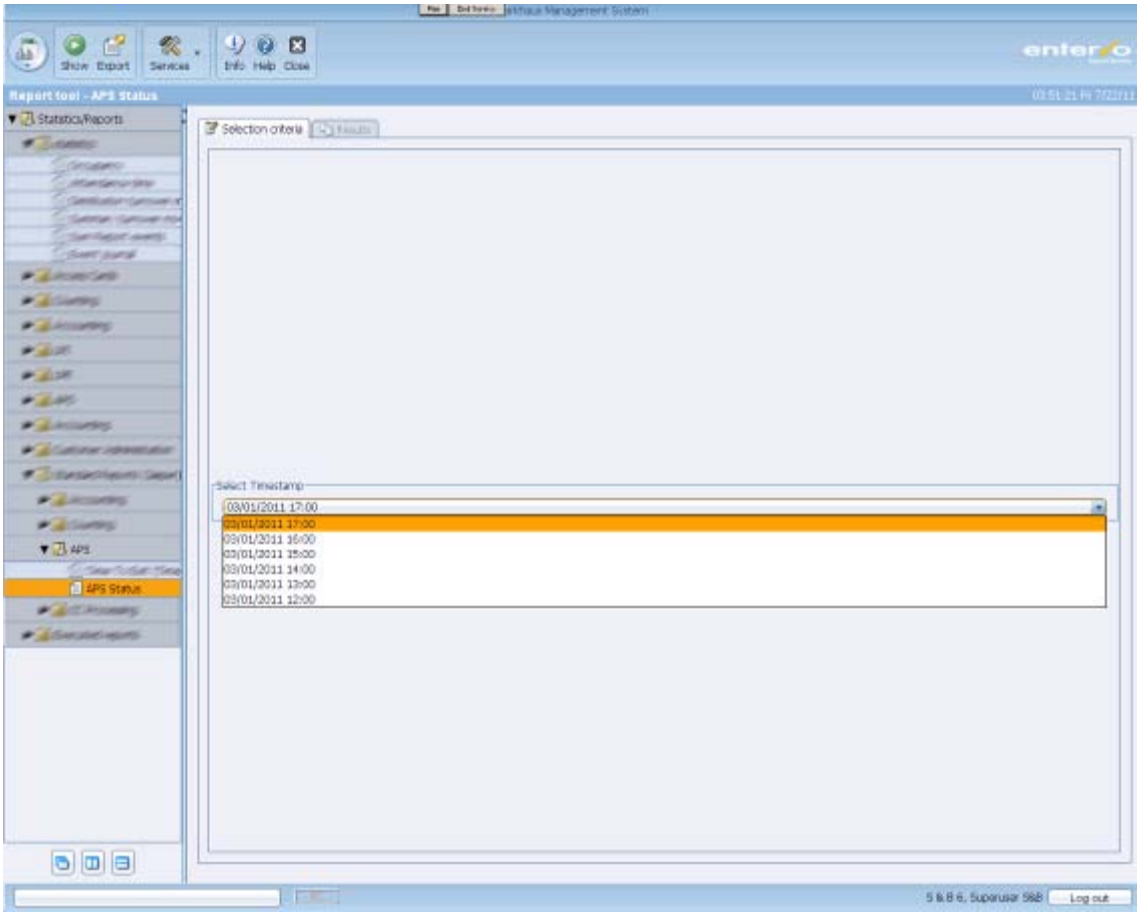
4.2.1 Short Description

This report will show the current financial status of all the APS units.

4.2.2 Source Data

This report is based on status information from the APS devices, which will be fetched in a predefined interval. (Std = 1 hour). By default, the most recent date is pre-selected.

4.2.3 Pre selection Screen



The Pre-selection Screen offers the following options:

- **Date**

  Select a date for which you would like to see the Status of all APS devices.

4.2.4 Report Sample

parking experts

APS Status Report (TimeBased)

Snapshot taken on: 07/21/2011 02:01:14

	CoinTubes						Hoppers			Banknote Cassettes			Total	Vault		
	#1	#2	#3	#4	#5	#6	Left	Middle	Right	#1	#2	#3	Coins	Coin	Cash	Total
Dev.	**(7017 / 601)**	**APS1**														
$ Val	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	5.00	10.00				
#	0	0	0	0	0	0	0	0	0	571	165	0	0	0	82	
$ Amt	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	571.00	825.00	0.00	0.00	0.00	1,134.00	2,530.00
Dev.	**(7017 / 603)**	**APS3**														
$ Val	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	5.00	10.00				
#	0	0	0	0	0	0	0	0	0	596	174	0	0	0	31	
$ Amt	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	596.00	870.00	0.00	0.00	0.00	284.00	1,750.00
Dev.	**(7017 / 604)**	**APS4**														
$ Val	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	5.00	10.00				
#	0	0	0	0	0	0	0	0	0	569	163	0	0	0	164	
$ Amt	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	569.00	815.00	0.00	0.00	0.00	2,099.00	3,483.00
Dev.	**(7017 / 606)**	**APS6**														
$ Val	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	5.00	10.00				
#	0	0	0	0	0	0	0	0	0	600	180	0	0	0	78	
$ Amt	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	600.00	900.00	0.00	0.00	0.00	698.00	2,198.00

Page : 1 / 1 APS Status Report (TimeBased) 1.0.0 Printed :08/02/2011 04:53:09

4.2.5 Description of each Column

Ref.	Column Header	Content
A	Device	Device ID and Facility Controller ID
B	Coin Store #1	Status of CoinTube #1
C	Coin Store #2	Status of CoinTube #2
D	Coin Store #3	Status of CoinTube #3
E	Coin Store #4	Status of CoinTube #4
F	Coin Store #5	Status of CoinTube #5
G	Coin Store #6	Status of CoinTube #6
H	Hopper Left	Status of left Hopper
I	Hopper Middle	Status of middle Hopper
J	Hopper Right	Status of right Hopper
K	BankNote Cassette #1	Status of Banknote Cassette #1
L	BankNote Cassette #2	Status of Banknote Cassette #2
M	BankNote Cassette #3	Status of Banknote Cassette #3
N	Total Coins	Count and Amount of coins within storages
O	Total Banknotes	Count and Amount of banknotes within storages
P	Coin Vault	Count and Amount of Coins within the Coin Vault
Q	Cash Vault	Count and Amount of Banknotes within the Cash Vault
R	Total	Total monetary Status of Device

For each storage and device, the report will list the $ Value, the amount of either coins or banknotes and the $ amount.

5 Credit Card Reports

5.1 CC-Error Report By Authorization (PADSS)

5.1.1 Short Description

This report provides the user with detailed information about unsuccessful attempts to authorize credit cards payments.

All rejected authorization requests within the given time frame are listed in chronological order providing the Authorization Status in red.

If the system was not able to authorize credit card payments because it was not able to contact the bank host system, it will attempt to authorize at a later point in time. The report will then also list these authorization requests and their results within additional lines of information.

Successful offline authorizations will be marked with a green Authorization Status. If the Authorization fails again (marked in RED) because the host declined the Credit Card due to various reasons, the shown revenue is totally lost.

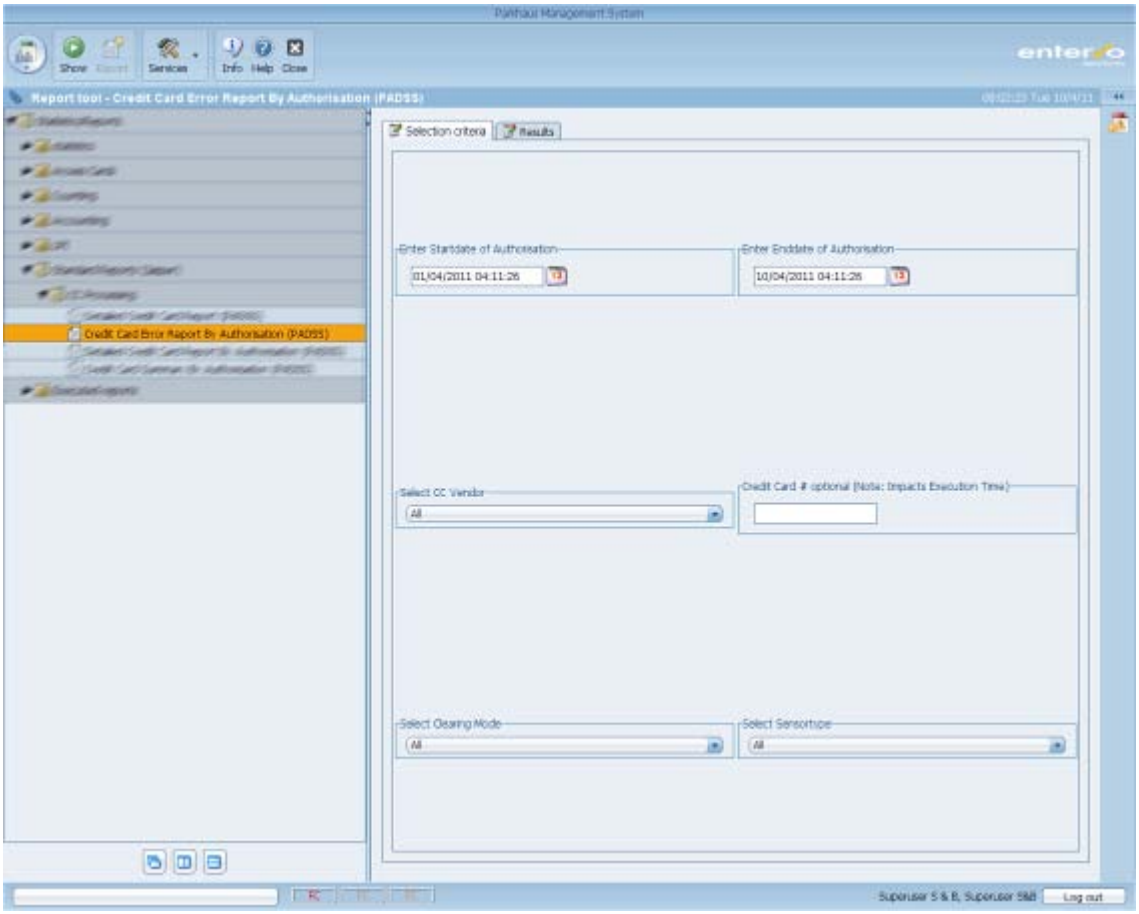
Note:

Due to the clearing house software interfaces the TerminalID and/or BatchID may **not** be available in your system. However, the reports will be fully functional without this information.

5.1.2 Source Data

The report is based on credit card data with **negative** authorization status' and will be retrieved based on the time stamp of the authorization request.

5.1.3 Pre-selection Screen



The Pre-selection screen offers the following options:

- **Startdate and Enddate of Authorization**
  Select start date and end date of the attempt to authorize the credit card.

- **CC-Vendor**
  Select either “All” or one of the credit card vendors provided in the dropdown box.

- **Credit Card Number (optional)**
  If you use this field, you must enter the credit card Hash Value. Searching for a specific credit card may result in an extremely slow response time.
- **Clearing Mode (Online or Offline**)

- **Sensor Type** (**Magnetic Stripe** or **Contactless**)
  A Contactless Credit Card is an RFID-enabled credit card that can be read by radio waves.

5.1.4 Report Sample

Detailed CC Error Report By Authorization Date

Start Authorizationtime: 01/04/2011 04:11:26
End Authorizationtime: 10/04/2011 04:11:26
Selected Vendor: All
Entered CC Number: No CC# entered
Selected Clearingmode: All
Selected Sensortype: All

Credit Card Hash Value	Expiry	Vendor	DevID	Net	Auth. Time	SensorTyp	Auth. Status	Terminal ID	Clearing Mode	Batch Id
010>::8:5:<930009<1073:217=	N/A	Novus	201	$ 0.50	05/12/2011 05:23:21	N/A	Denied By Host	N/A	Offline	N/A
010>::8:5:<930009<1073:217=	N/A	Novus	201	$ 0.50	05/12/2011 05:23:59	N/A	Denied By Host	N/A	Offline	N/A
010>::8:5:<930009<1073:217=	1212	Novus	601	$ 21.00	05/16/2011 07:17:00	N/A	Denied (Host offl.)	N/A	Offline	N/A
			601	$ 21.00	05/16/2011 07:19:25		Authorized	OFFL	Offline	N/A
010>::8:5:<930009<1073:217=	1212	Novus	601	$ 2.00	05/31/2011 05:00:17	N/A	No Host Response	N/A	Offline	N/A
013637266642=55151746<09=37>8	1212	Visa	601	$ 4.00	06/03/2011 02:59:00	N/A	Denied (Host offl.)	N/A	Offline	N/A
			601	$ 4.00	06/06/2011 03:39:44		Authorized	OFFL	Offline	N/A
013637266642=55151746<09=37>8	1212	Visa	601	$ 4.00	06/03/2011 03:01:42	N/A	Denied (Host offl.)	N/A	Offline	N/A
			601	$ 4.00	06/06/2011 03:39:38		Authorized	OFFL	Offline	N/A
013637266642=55151746<09=37>8	1212	Visa	601	$ 4.00	06/03/2011 04:00:22	N/A	Denied (Host offl.)	N/A	Offline	N/A
			601	$ 4.00	06/06/2011 03:39:32		Authorized	OFFL	Offline	N/A
013637266642=55151746<09=37>8	1212	Visa	821	$ 4.00	06/03/2011 04:12:03	N/A	Denied (Host offl.)	N/A	Offline	N/A
			821	$ 4.00	06/06/2011 03:39:56		Authorized	OFFL	Offline	N/A
013752:6043>5?14;35;<1::595<5	1212	Mastercard	601	$ 4.00	06/03/2011 04:14:06	N/A	Denied (Host offl.)	N/A	Offline	N/A
			601	$ 4.00	06/06/2011 03:39:24		Authorized	OFFL	Offline	N/A
013752:6043>5?14;35;<1::595<5	1212	Mastercard	821	$ 4.00	06/03/2011 04:20:01	N/A	Denied (Host offl.)	N/A	Offline	N/A
			821	$ 4.00	06/06/2011 03:39:47		Authorized	OFFL	Offline	N/A
013752:6043>5?14;35;<1::595<5	1212	Mastercard	601	$ 4.00	06/03/2011 04:23:27	N/A	Denied (Host offl.)	N/A	Offline	N/A
			601	$ 4.00	06/06/2011 03:39:20		Authorized	OFFL	Offline	N/A
013752:6043>5?14;35;<1::595<5	1212	Mastercard	821	$ 1.00	06/03/2011 04:30:17	N/A	Denied (Host offl.)	OFFL	Offline	N/A
			821	$ 1.00	06/03/2011 04:30:17		Denied (Host offl.)	N/A	Offline	N/A
013752:6043>5?14;35;<1::595<5	1212	Mastercard	821	$ 1.00	06/03/2011 04:30:17	N/A	Denied (Host offl.)	N/A	Offline	N/A
			821	$ 1.00	06/06/2011 03:39:08		Denied (Host offl.)	OFFL	Offline	N/A
013637266642=55151746<09=37>8	1212	Visa	221	$ 4.00	06/03/2011 04:44:42	N/A	Denied (Host offl.)	N/A	Offline	N/A
			221	$ 4.00	06/06/2011 03:40:24		Authorized	OFFL	Offline	N/A
013637266642=55151746<09=37>8	1212	Visa	221	$ 4.00	06/03/2011 04:46:14	N/A	Denied (Host offl.)	N/A	Offline	N/A
			221	$ 4.00	06/06/2011 03:39:59		Denied (Host offl.)	OFFL	Offline	N/A

Page : 1 / 3 — Detailed CC Error Report By Authorization Date 1.0.0 — Printed :10/04/2011 06:43:41

5.1.5 Description of Each Column

Ref.	Column Header	Content
A	Credit Card Hash Value	Encrypted unique Credit Card #
B	Expiry	Expiration Date of Credit Card
C	Vendor	Vendor of Credit Card
D	DevID	S&B Device ID where the Credit Card was used
E	Net	Amount due
F	Auth.Time	Time stamp when payment was declined
G	Sensor Type	Magstripe or Contactless
H	Auth. Status	Status of Authorization RED if transaction was not successfully authorized GREEN if transaction was successfully authorized
J	Terminal ID	ID of clearing device
K	Clearing Mode	Online or Offline
L	BatchId	SB BatchId

5.2 CC Summary By Authorization (PADSS)

5.2.1 Short Description

This report provides summary information about processed credit card payments. Based on the preselected credit card vendors it will be grouped and summarized by the following categories:

- Terminal ID:

  These have been provided by the clearing house. Please refer to the list which Terminal ID is linked to which device or group of devices.

- BatchId

  This is the Scheidt&Bachmann BatchId and is not necessarily related to the BatchID provided by the clearing house statement.

- Facility (for which payment was made).

  Two special Facilities may occur here:

  - No Payment Data

    Will be displayed if the system has not yet found related payment information within the sales data.

    A possible cause can be if devices are offline and were not able to send their sales data yet.

  - No Facility

    Will be displayed if the system was not able to determine to which facility it should link the revenue.

    Example: An Insufficient Fund is paid with Credit Card. As the customer no longer has a parking ticket, the link to the original parking transaction is lost.

For each category, a subtotal per vendor plus a summary per category is provided.

The last page provides a grand total of all previous subtotals, grouped by the vendor details.

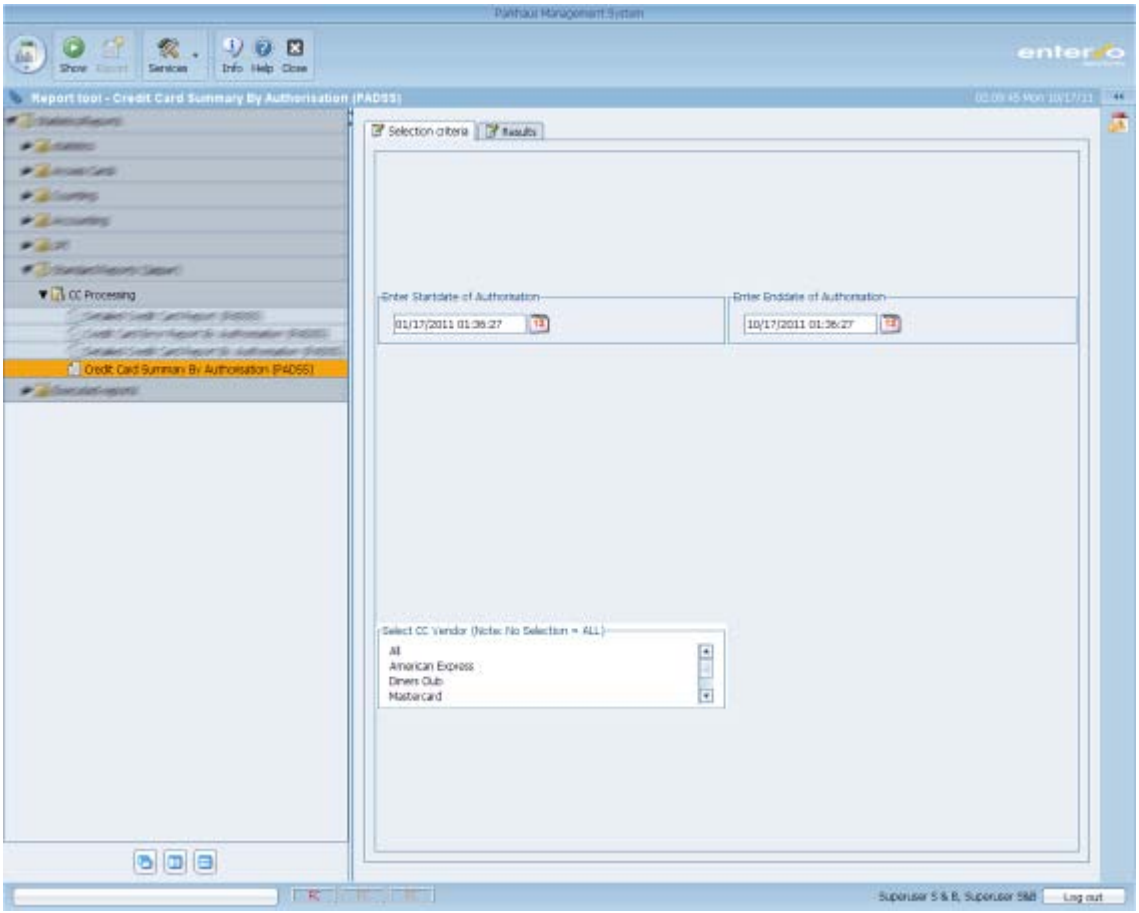
Note:

Due to the clearing house software interfaces the TerminalID and/or BatchID may **not** be available in your system. However, the reports will be fully functional without this information.

5.2.2 Source Data

This report is based on credit card data with **positive** authorization status and will be retrieved based on the time stamp of the authorization request.

5.2.3 Pre-selection Screen



- **Startdate and Enddate of Authorization**

  Select start date and end date that the credit card transaction was authorized.

- **CC-Vendor**

  This is a “MultiSelect” list. By holding down the “Ctrl” Key it is possible to select more than one credit card vendor. This enables the user to summarize certain groups of credit card vendors.

  If no selection is made (no item is highlighted) or if the “All” item is selected, all of the available credit card vendors are evaluated and summarized.

5.2.4 Report Sample

CC Summary By Authorization Date

Start Authorizationtime: 01/17/2011 04:37:42
End Authorizationtime: 10/17/2011 04:37:42
Selected Vendor: All

Facility	Batch Id	Terminal ID	Vendor	Count	Net Amount
No Payment Data	N/A	OFFL	Novus Discover	3	$ 37.00
		Subtotal (TerminalID)		3	$ 37.00
		N/A	American Express	2	$ 46.00
			Diners Club	1	$ 26.00
			Mastercard	10	$ 281.00
			Novus Discover	9	$ 394.00
			Visa	6	$ 194.00
		Subtotal (TerminalID)		28	$ 941.00
	Subtotal (BatchId)		Diners Club	1	$ 26.00
			Mastercard	10	$ 281.00
			American Express	2	$ 46.00
			Novus Discover	12	$ 431.00
			Visa	6	$ 194.00
				31	$ 978.00
Subtotal (Facility)			Diners Club	1	$ 26.00
			Mastercard	10	$ 281.00
			American Express	2	$ 46.00
			Novus Discover	12	$ 431.00
			Visa	6	$ 194.00
				31	$ 978.00
No Facility	N/A	OFFL	Visa	1	$ 2.00
		Subtotal (TerminalID)		1	$ 2.00
		N/A	Mastercard	3	$ 57.00
			Novus Discover	1	$ 2.00
			Visa	2	$ 63.00
		Subtotal (TerminalID)		6	$ 122.00
	Subtotal (BatchId)		Mastercard	3	$ 57.00
			Novus Discover	1	$ 2.00
			Visa	3	$ 65.00
				7	$ 124.00
Subtotal (Facility)			Mastercard	3	$ 57.00
			Novus Discover	1	$ 2.00
			Visa	3	$ 65.00
				7	$ 124.00
Daily Garage	N/A	OFFL	Novus Discover	1	$ 21.00
		Subtotal (TerminalID)		1	$ 21.00
		N/A	American Express	3	$ 37.00
			Mastercard	10	$ 278.00
			Novus Discover	14	$ 148.00
			Visa	8	$ 124.00
		Subtotal (TerminalID)		35	$ 587.00
	Subtotal (BatchId)		Mastercard	10	$ 278.00
			American Express	3	$ 37.00
			Novus Discover	15	$ 169.00
			Visa	8	$ 124.00
				36	$ 608.00
Subtotal (Facility)			Mastercard	10	$ 278.00
			American Express	3	$ 37.00
			Novus Discover	15	$ 169.00
			Visa	8	$ 124.00
				36	$ 608.00

Page : 1 / 3 CC Summary By Authorization Date 1.0.0 Printed : 10/17/2011 04:37:54

5.2.4.1 Description of Each Column

Ref.	Column Header	Content
A	Facility	Facility for which Credit Card payment was made. See additional info in description above
B	Batch ID	Internal S&B Batch ID. Note: This is not necessarily the same ID which is provided by the clearing house statement.
C	Terminal ID	Terminal IDs are provided by the clearing house and can be linked to either single S&B devices or device groups. See site specific mapping list.
D	Vendor	Textual description of CC vendor
E	Count	Number of payments for this vendor
F	Net Amount	$ amounts for payments with this vendor

5.3 Detailed CC Payment By Authorization Date (PADSS)

5.3.1 Short Description

This report provides the user with detailed information about processed payments with credit cards.

The information is grouped by the Facility for which the payment was made (the facility where the patron has parked). Within this facility group, the information is sorted by the authorization time stamp. At the end of each facility group a subtotal by individual vendor is provided. The numbers in brackets represent the count for each individual vendor. The subtotal is followed by a grand total for the complete facility.

Note: Two special Facilities may occur here:

- No Payment Data

  Will be displayed if the system has not yet found related payment information within the sales data.

  A possible cause can be if devices are offline and were not able to send their sales data yet.

- No Facility

  Will be displayed if the system was not able to determine to which facility it should link the revenue.

  Example: An Insufficient Fund is paid with a Credit Card. As the customer no longer has a parking ticket, the link to the original parking transaction is lost.

Each individual facility starts on a new page. An overall grand total is provided on a separate page at the end of the report.

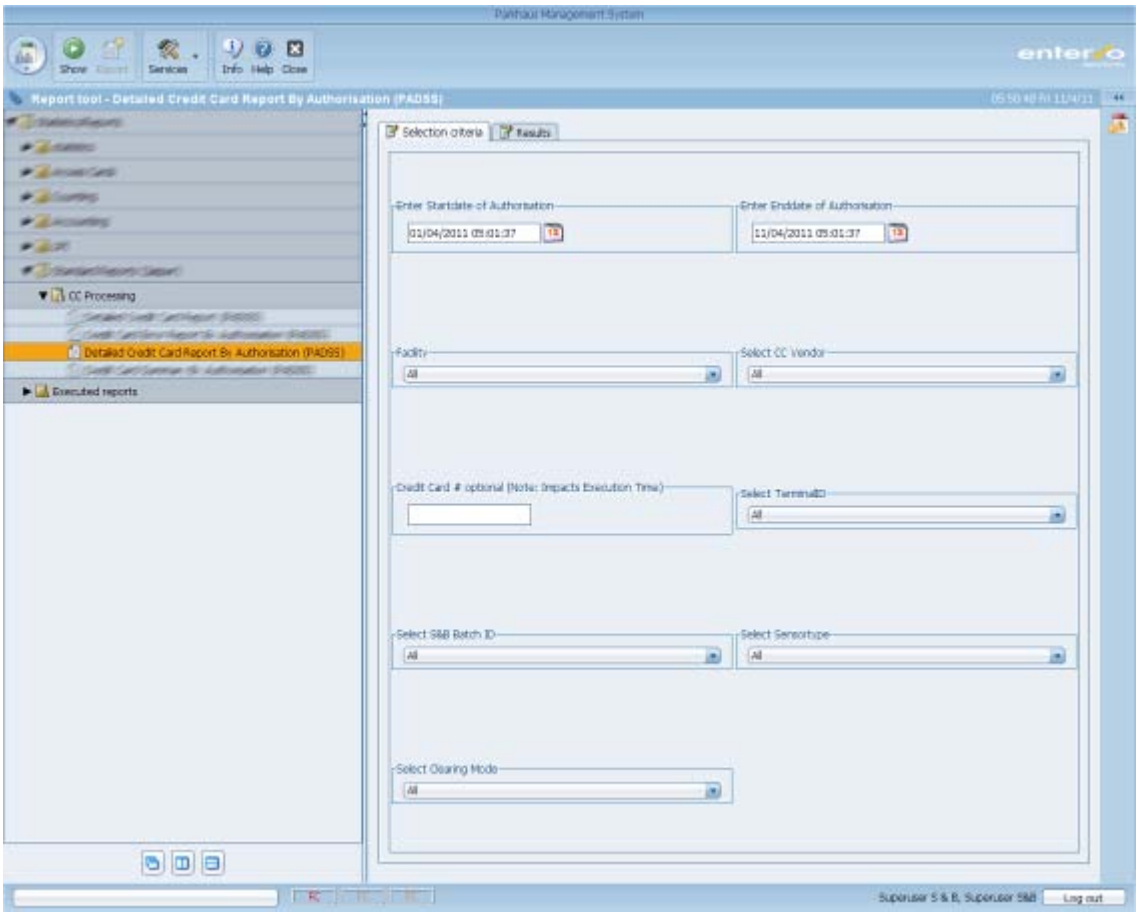
Note:

Due to the clearing house software interfaces the TerminalID and/or BatchID may **not** be available in your system. However, the reports will be fully functional without this information.

5.3.2 Source Data

The report is based on credit card data with **positive** authorization status and will be retrieved based on the time stamp of the authorization request. On a daily basis (during each night) the credit card server data is collected and internally linked with sales information.

5.3.3 Pre-selection Screen



The Pre-selection screen offers the following options:

- **Startdate and Enddate of Authorization**
- Select start date and end date of the authorization of the credit card.
- **Facility**

  Select either “All” or a specific facility for which credit card payments were made.
- **CC-Vendor**

  Select either “All” or one of the credit card vendors provided in the dropdown box.
- **Credit Card Number (optional)**

  If you use this field, you must enter the credit card Hash Value. Searching for a specific credit card may result in an extremely slow response time.
- **Terminal ID**

  Select either “All” or one of the Terminal ID’s provided in the dropdown box.

- **S&B BatchID**
  Select either “All” or one of the Batch ID’s provided in the dropdown box. The S&B BatchID is NOT the BatchID provided by the clearing house.
- **Sensor Type** (Magnetic Stripe or Contactless)
  A Contactless card is an RFID-enabled credit card that can be read by radio waves.

- **Clearing Mode** (Online or Offline)

5.3.4 Report Sample

Detailed CC Payment By Authorization Date

Start Authorizationtime:	01/04/2011 05:01:37
End Authorizationtime:	11/04/2011 05:01:37
Selected Facility:	All
Selected Vendor:	All
Entered CC Number:	No CC# entered
Selected TerminalID:	All
Selected BatchID:	All
Selected SensorType:	All
Selected ClearingMode:	All

CC #	Exp	Auth.Time	PayDev.	Auth.ID		Auth.Status	Net Amount	Vendor	Batch Id	Clear.Mode
Epan Paid For	Entry	Entrytime	ShiftID	Exittime	Exit	Terminal ID			BatchClose	SensorType
No Payment Data										
010>::8:5;<930009<1073;217=	N/A	05/12/2011 03:48:06	601	0000124954		Authorized	$ 36.00	Novus Discover	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	OFFL			05/12/2011 05:44:58	N/A
010>::8:5;<930009<1073;217=	N/A	05/12/2011 04:02:18	601	0000124954		Authorized	$ 0.50	Novus Discover	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	OFFL			05/12/2011 05:44:54	N/A
010>::8:5;<930009<1073;217=	N/A	05/12/2011 04:14:36	601	0000124954		Authorized	$ 0.50	Novus Discover	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	OFFL			05/12/2011 05:44:50	N/A
017<;<=396007:17325523777?:?6	N/A	05/25/2011 07:45:47	204	0000124954		Authorized	$ 6.00	Mastercard	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			05/25/2011 07:45:51	N/A
017<;<=396007:17325523777?:?6	N/A	05/25/2011 08:28:17	204	0000124954		Authorized	$ 56.00	Mastercard	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			05/25/2011 08:28:20	N/A
01<:4=200<?;:8066;<528:48:1	N/A	05/25/2011 09:00:36	204	0000124954		Authorized	$ 25.00	Visa	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			05/25/2011 09:00:39	N/A
0104082772?22<8431:3;1;:<::8	N/A	05/25/2011 09:35:10	204	0000124954		Authorized	$ 26.00	American Express	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			05/25/2011 09:35:14	N/A
0154690458533004441<>60;5179	N/A	05/25/2011 09:35:59	204	0000124954		Authorized	$ 26.00	Diners Club	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			05/25/2011 09:36:03	N/A
017<;<=396007:17325523777?:?6	N/A	05/25/2011 09:36:40	204	0000124954		Authorized	$ 26.00	Mastercard	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			05/25/2011 09:36:44	N/A
0104082772?22<8431:3;1;:<::8	N/A	05/25/2011 09:48:19	801	0000124954		Authorized	$ 20.00	American Express	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			05/25/2011 09:48:22	N/A
017<;<=396007:17325523777?:?6	N/A	05/27/2011 08:36:56	801	0000124954		Authorized	$ 9.00	Mastercard	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			05/27/2011 08:37:00	N/A
010>::8:5;<930009<1073;217=	N/A	05/30/2011 07:05:52	801	0000124954		Authorized	$ 6.00	Novus Discover	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			05/30/2011 07:05:55	N/A
010>::8:5;<930009<1073;217=	N/A	06/01/2011 04:44:53	801	0000124954		Authorized	$ 100.00	Novus Discover	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			06/01/2011 04:44:56	N/A

Page : 1 / 16 Detailed CC Payment By Authorization Date 1.0.0 Printed : 11/04/2011 06:43:57

5.3.5 Description of each Column

Ref.	Column Header	Content
A(1)	**CC #**	**Credit Card number**
A(2)	Epan Paid For	Access Media (Ticket, Access Card, etc…) for which this payment was made
B(1)	Exp Date	Month/Year of Expiration of CC card
B(2)	Entry	Entry Device ID for this parking transaction
C(1)	**Authorisation Date - Time**	**Time stamp when payment was authorized**
C(2)	Entry time	Time stamp when this parking transaction began
D(1)	PayDev	DeviceID where this payment was processed
D(2)	Shift ID	ID of shift in which payment was processed. Note: Shift must be closed to show ID. If shift is not yet closed it shows a “0” (zero)
E(1)	Auth ID	Authorization ID
E(2)	Exit time	Time stamp when this parking transaction ended
F(1)	N/A	N/A
F(2)	Exit	Exit Device ID for this parking transaction
G(1)	Net Amount	Amount being paid with CC
G(2)	N/A	N/A
H(1)	Vendor	Vendor of credit card
H(2)	N/A	N/A
I(1)	S&B Batch ID	S&B internal Batch ID (not necessarily the clearing house Batch ID!)
I(2)	BatchClose Date – Time	Time stamp when S&B Batch was closed
K(1)	Clr. Mode	Mode of clearing (either online or offline)
K(2)	Sensor Type	Sensor type of Credit Card (either Magnetic Stripe or Contactless)

6 License Plate Recognition Inventory Reports

6.1 Active Inventory Report

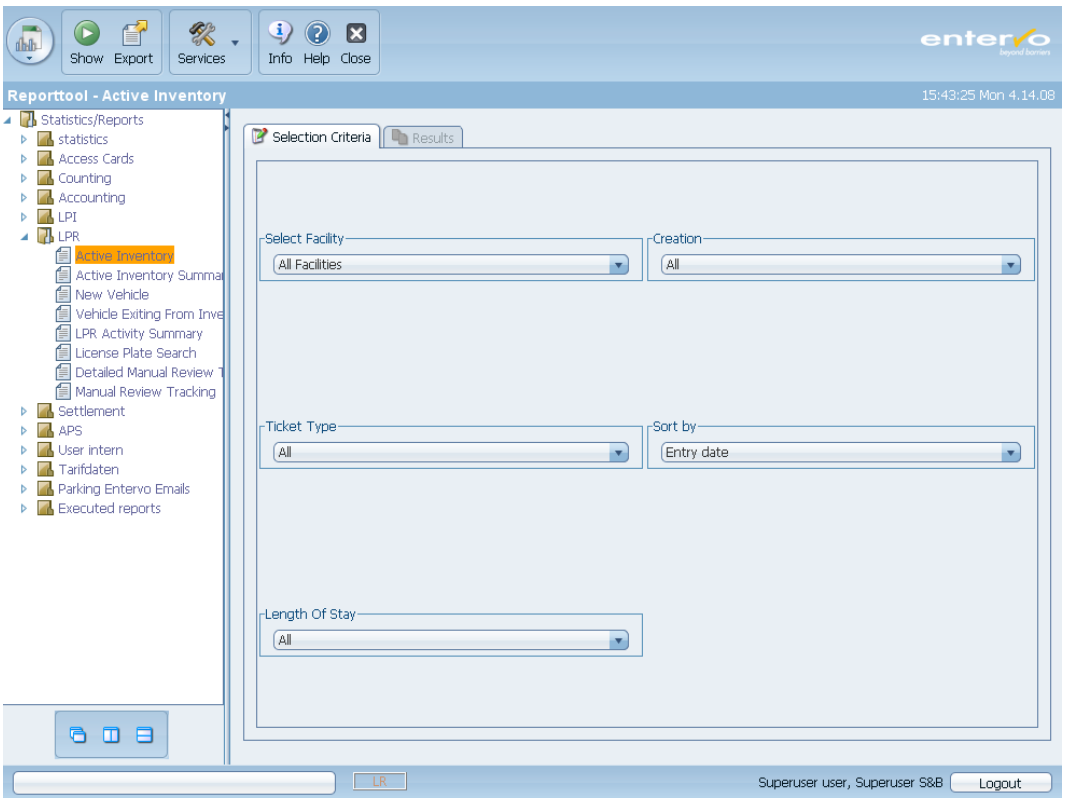
6.1.1 Short Description

This report provides the active inventory of vehicles parked in the facility along with the license plate, entry date and time, parking time, etc. If License Plate Inventory has been processed overnight, additional information concerning the parking level, row and space will also be available.

6.1.2 Source Data

The report is based on LPR active inventory information.

6.1.3 Pre-selection Screen



Within the Pre-Selection screen you can choose facility and date/time for which the report should be generated A differentiation can be made between Short Term Parkers or Access Cards (or both). There are several sorting orders possible to allow a maximum of flexibility. It is also possible to show only tickets that are present for a certain amount of time.

6.1.4 Report Sample

entrvo
beyond barriers

Active Inventory(1.1.0)

Printed : 10/21/2009 07:05

Pre-Selection Screen Options
Facility : All Facilities
Creation : All
Type Of Cards : All
Sort by : Entry date
Length Of Stay : More Than 30 Days

State	Type	License Plate No.	LVL	ROW	SPC	Ticket ID	Entry Lane	Entry Date/ Time	Length of Stay	Facility	Creation
	U	620VHE				8721011029236160720	102	08/24/2009 04:27	58 / 02:43:31	Economy Lot	Entry
	U	840SKX				8721011029236170100	102	08/24/2009 04:43	58 / 02:26:15	Economy Lot	Entry
	U	854PSB				8721011019236198030	101	08/24/2009 05:30	58 / 01:40:20	Economy Lot	Entry
	U	1JNM0D				8721011019236199730	101	08/24/2009 05:32	58 / 01:37:30	Economy Lot	Entry
	U	871BN3				8721011019236206000	101	08/24/2009 05:43	58 / 01:27:03	Economy Lot	Entry
	U	315UBB				8721011029236221270	102	08/24/2009 06:08	58 / 01:01:36	Economy Lot	Entry
	U	WNM				8721011019236222130	101	08/24/2009 06:10	58 / 01:00:10	Economy Lot	Entry
	U	1VLNY				8721011029236226390	102	08/24/2009 06:17	58 / 00:53:04	Economy Lot	Entry
	U	51421				8721011019236228250	101	08/24/2009 06:20	58 / 00:49:58	Economy Lot	Entry
	U	MEVD				8721011029236229090	102	08/24/2009 06:21	58 / 00:48:34	Economy Lot	Entry
	U	#MOLPN				8721011019236231880	101	08/24/2009 06:26	58 / 00:43:55	Economy Lot	Entry
	U	AALJ5				8721011019236233840	101	08/24/2009 06:29	58 / 00:40:39	Economy Lot	Entry
	U	976BEP				8721011019236237440	101	08/24/2009 06:35	58 / 00:34:39	Economy Lot	Entry
	U	A344				8721011029236241590	102	08/24/2009 06:42	58 / 00:27:44	Economy Lot	Entry
	U	536XVP				8721011019236241890	101	08/24/2009 06:43	58 / 00:27:14	Economy Lot	Entry
	U	JERKJ				8721011019236244300	101	08/24/2009 06:46	58 / 00:23:33	Economy Lot	Entry
	U	28				8721011029236245300	102	08/24/2009 06:48	58 / 00:21:33	Economy Lot	Entry
	U	A53BN				8721011029236258510	102	08/24/2009 07:10	57 / 23:59:32	Economy Lot	Entry
	U	5QJV959				8721011019236260520	101	08/24/2009 07:14	57 / 23:56:11	Economy Lot	Entry
	U	689VBP				8721011029236267270	102	08/24/2009 07:25	57 / 23:44:56	Economy Lot	Entry
	U	623NA7				8721011019236267710	101	08/24/2009 07:26	57 / 23:44:32	Economy Lot	Entry
	U	5ZGA23				8721011029236267950	102	08/24/2009 07:26	57 / 23:43:48	Economy Lot	Entry
	U	4E8A				8721011029236268100	102	08/24/2009 07:26	57 / 23:43:33	Economy Lot	Entry
	U	831RUB				8721011019236277660	101	08/24/2009 07:42	57 / 23:27:37	Economy Lot	Entry
	U	5EUP788				8721011029236278520	102	08/24/2009 07:44	57 / 23:26:11	Economy Lot	Entry
	U	373VB3				8721011019236279790	101	08/24/2009 07:46	57 / 23:24:04	Economy Lot	Entry
	U	129YF2				8721011029236286050	102	08/24/2009 07:56	57 / 23:13:38	Economy Lot	Entry
	U	365TZB				8721011029236286590	102	08/24/2009 07:57	57 / 23:12:44	Economy Lot	Entry
	U	8R90220				8721011029236287050	102	08/24/2009 07:58	57 / 23:11:58	Economy Lot	Entry
	U	812SZD				8721011029236287600	102	08/24/2009 07:59	57 / 23:11:03	Economy Lot	Entry

Page 1 (Active Inventory 1.1.0)

Note : *Entries with Access cards are in bold type.*

6.1.5 Description of Each Column

Ref.	Column Header	Content
A	State	State information of license plate
B	Type	Additional vehicle information
C	License Plate No.	License plate number associated with the entry transaction.
D	LVL	If License Plate Inventory is used: Level on which the car is parked in the facility.
E	ROW	If License Plate Inventory is used: Row in which the car is parked.
F	SPC	If License Plate Inventory is used: Space number in which the car is parked.
G	Ticket ID	Ticket EPAN If the ticket EPAN refers to an Access Card the entire row will be in bold type.
H	Entry Lane	Identification number of the entry device associated with the entry transaction and license plate number
I	Entry Date/Time	Date and time of entry transaction
K	Length of Stay	Number of days, hours, minutes and seconds the vehicle is recorded in the inventory database as of the chosen Pre-Selection date.
L	Facility	Name of facility car has entered
M	Creation	Entry device, Manual intervention or All based on **Creation** choice in the Pre-Selection screen.

6.2 Active Inventory Summary Report

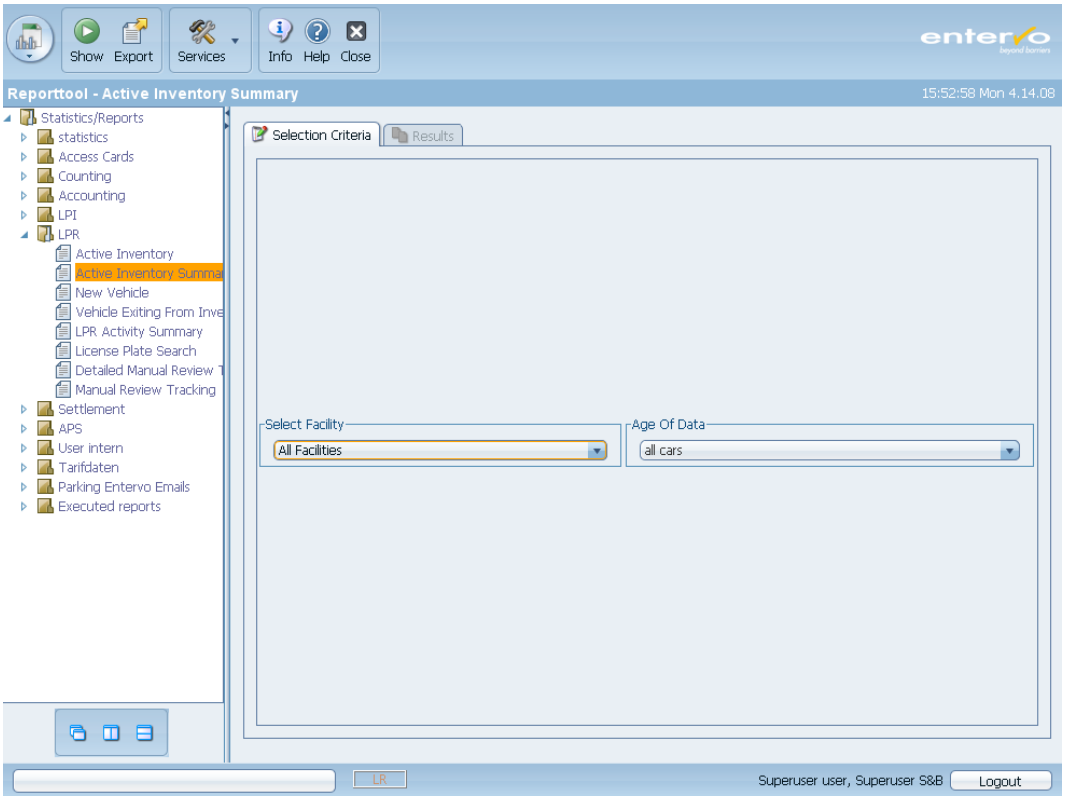
6.2.1 Short Description

This report provides the total number of active vehicles and total number of days in the license plate inventory for each facility.

6.2.2 Source Data

The report is based on LPR inventory information.

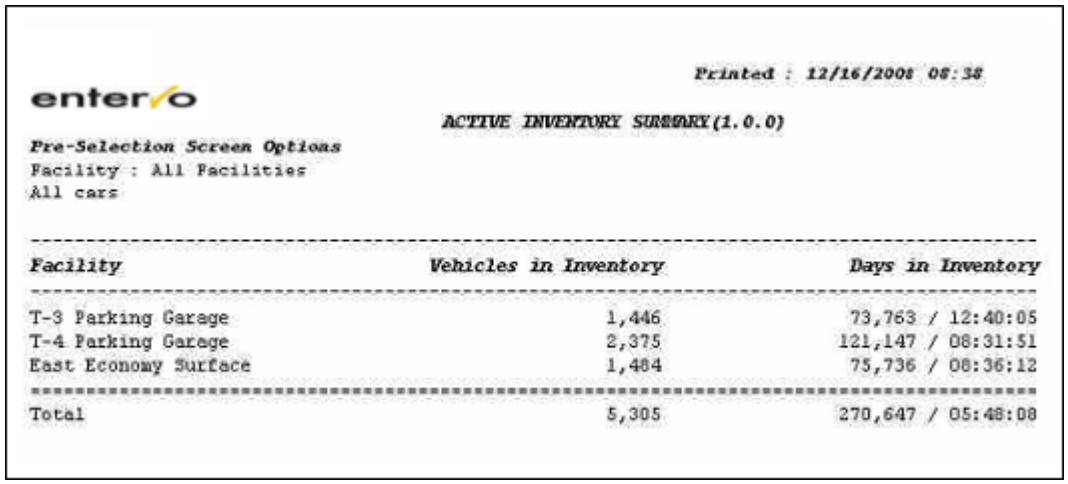
6.2.3 Pre-Selection Screen



Within the Pre-Selection screen you can choose the facility and the time frame in days for which the report should be generated.

In the **Age of Data** field, you can select All Cars or a specific time frame (e.g., 30, 60 or 90 days).

6.2.4 Report Sample



entervo

Printed : 12/16/2008 08:38

ACTIVE INVENTORY SUMMARY(1.0.0)

Pre-Selection Screen Options
Facility : All Facilities
All cars

Facility	Vehicles in Inventory	Days in Inventory
T-3 Parking Garage	1,446	73,763 / 12:40:05
T-4 Parking Garage	2,375	121,147 / 08:31:51
East Economy Surface	1,484	75,736 / 08:36:12
Total	5,305	270,647 / 05:48:08

6.2.5 Description of Each Column

Ref.	Column Header	Content
A	Facility	Name of the parking facility / garage
B	Vehicles In Inventory	Total amount of active vehicles for a specific facility.
C	Days In Inventory	Total number of days all active vehicles stayed in a facility.

6.3 New Vehicle Report

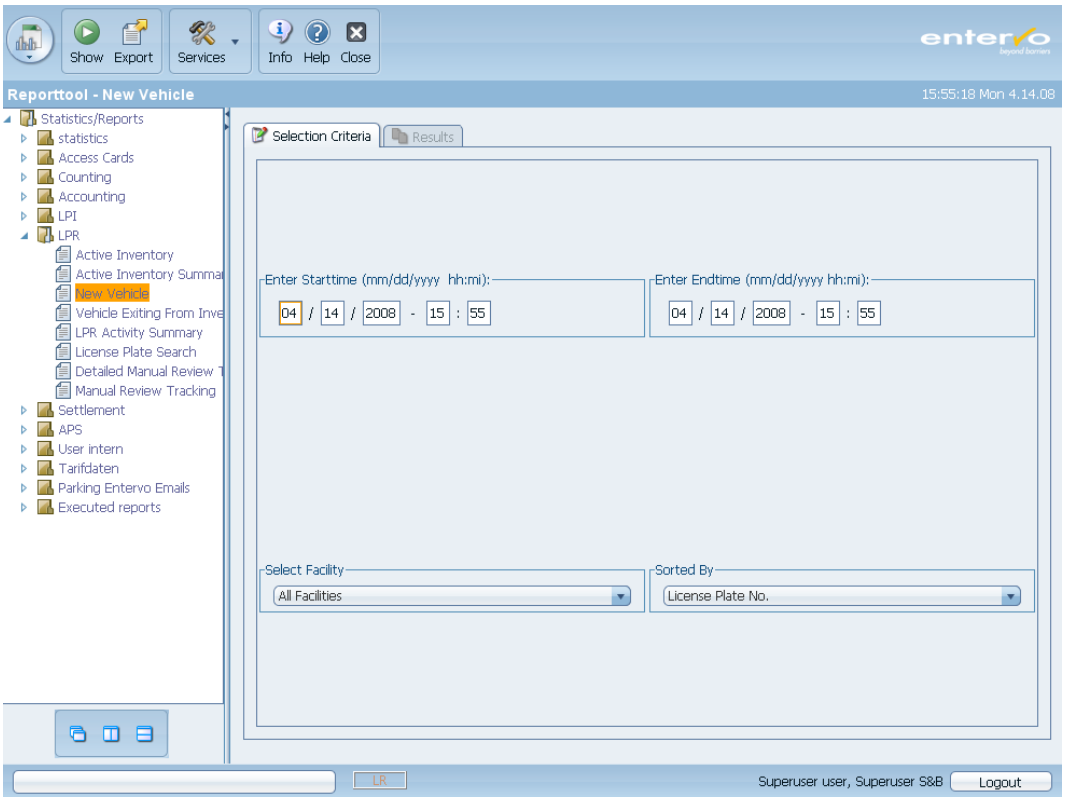
6.3.1 Short Description

This report provides a list of all the license plates added to the active inventory over a specified date and time. It includes license plate number, license plate state and type, ticket number, entry lane, and entry date and time. If License Plate Inventory has been processed overnight, additional information concerning the parking level, row and space will also be available.

6.3.2 Source Data

The report is based on LPR inventory information.

6.3.3 Pre-Selection Screen



Within the Pre-Selection screen you can choose the start date and sorting order.

6.3.4 Report Sample

entervo
beyond barriers

Printed : 10/21/2009 06:57

New Vehicle(1.1.0)

Pre-Selection Screen Options
Enter Start Date : 10/20/2009 07:02
Enter End Date : 10/21/2009 07:02
Facility : All Facilities
Sort by : License Plate No.

State	Type	License Plate No.	LVL	ROW	SPC	Ticket ID	Entry Lane	Entry Date/ Time	Facility	Creation
NV	U	#NOLPN				87210111292933743S0	112	10/20/2009 10:23	Remote Lot	Exit
NV	U	#NOLPN				87210110192935687O0	101	10/20/2009 15:42	Economy Lot	Exit
NV	U	#NOLPN				87210110492936122O0	104	10/20/2009 17:00	Economy Lot	Exit
NV	U	#NOLPN				87210110492936444I0	104	10/20/2009 17:54	Economy Lot	Exit
NV	U	#NOLPN				87210110492937034300	104	10/20/2009 19:32	Economy Lot	Exit
NV	U	#NOLPN				87210110292937069700	102	10/20/2009 08:31	Economy Lot	Entry
NV	U	008NBB				87210110292934307I0	102	10/20/2009 11:57	Economy Lot	Entry
NV	U	009VXM				87210110392932670S0	103	10/20/2009 07:25	Economy Lot	Entry
NV	U	001WDC				87210110292939441S0	102	10/20/2009 10:56	Economy Lot	Entry
NV	U	006VHC				87210110392941996I0	103	10/21/2009 05:32	Economy Lot	Entry
NV	U	009QMK				87210110292932647I0	102	10/20/2009 07:21	Economy Lot	Entry
NV	U	011VXC				87210110192933643400	101	10/20/2009 10:07	Economy Lot	Exit
NV	U	013URV				87210110392942190300	103	10/21/2009 06:05	Economy Lot	Entry
NV	U	013WSJ				87210110292942388O0	102	10/21/2009 06:38	Economy Lot	Entry
NV	U	014ETU				87210110192935661100	101	10/20/2009 15:43	Economy Lot	Entry
NV	U	018VXV				87210110392942365S0	103	10/21/2009 05:34	Economy Lot	Entry
NV	U	019NXS				87210110292934039S0	102	10/20/2009 11:13	Economy Lot	Entry
NV	U	020H				87210110392942261H0	103	10/21/2009 06:16	Economy Lot	Entry
NV	U	022VRG				87210110492934538900	104	10/20/2009 12:36	Economy Lot	Exit
NV	U	024FCS				87210110292942135200	102	10/21/2009 05:55	Economy Lot	Entry
NV	U	029KAH				87210110192935415400	101	10/20/2009 15:02	Economy Lot	Entry
NV	U	029SPYI				87210110292933362600	102	10/20/2009 09:20	Economy Lot	Exit
NV	U	037UBN				87210110392932613200	103	10/20/2009 07:15	Economy Lot	Entry
NV	U	038NFC				87210110192932682O0	101	10/20/2009 07:27	Economy Lot	Entry
NV	U	039RCY				87210110292936993200	102	10/20/2009 19:25	Economy Lot	Entry
NV	U	041JMS				87210110292941682700	102	10/21/2009 04:40	Economy Lot	Entry
NV	U	042NNL				87210110292932562800	102	10/20/2009 07:07	Economy Lot	Exit
NV	U	044NTY				87210110292941699400	102	10/21/2009 04:43	Economy Lot	Entry
NV	U	044WDD				87210110292936044300	102	10/20/2009 11:44	Economy Lot	Entry
NV	U	045UBC				87210110292935885O0	102	10/20/2009 16:20	Economy Lot	Entry

6.3.5 Description of Each Column

Ref.	Column Header	Content
A	State	State information of license plate
B	Type	Additional vehicle information
C	Plate No.	License plate number associated with the entry transaction.
D	LVL	If License Plate Inventory is used: Level on which the car is parked in the facility.
E	ROW	If License Plate Inventory is used: Row in which the car is parked.
F	SPC	If License Plate Inventory is used: Space number in which the car is parked.
G	Ticket ID	Ticket EPAN
H	Entry Lane	Identification number of the entry device associated with the entry transaction and license plate number
I	Entry Date/ Time	Date and time of entry transaction
K	Facility	Name of facility car entered
L	Creation	Entry device, Manual intervention or All based on **Creation** choice in the Pre-Selection screen

6.4 Vehicle Exiting from Inventory Report

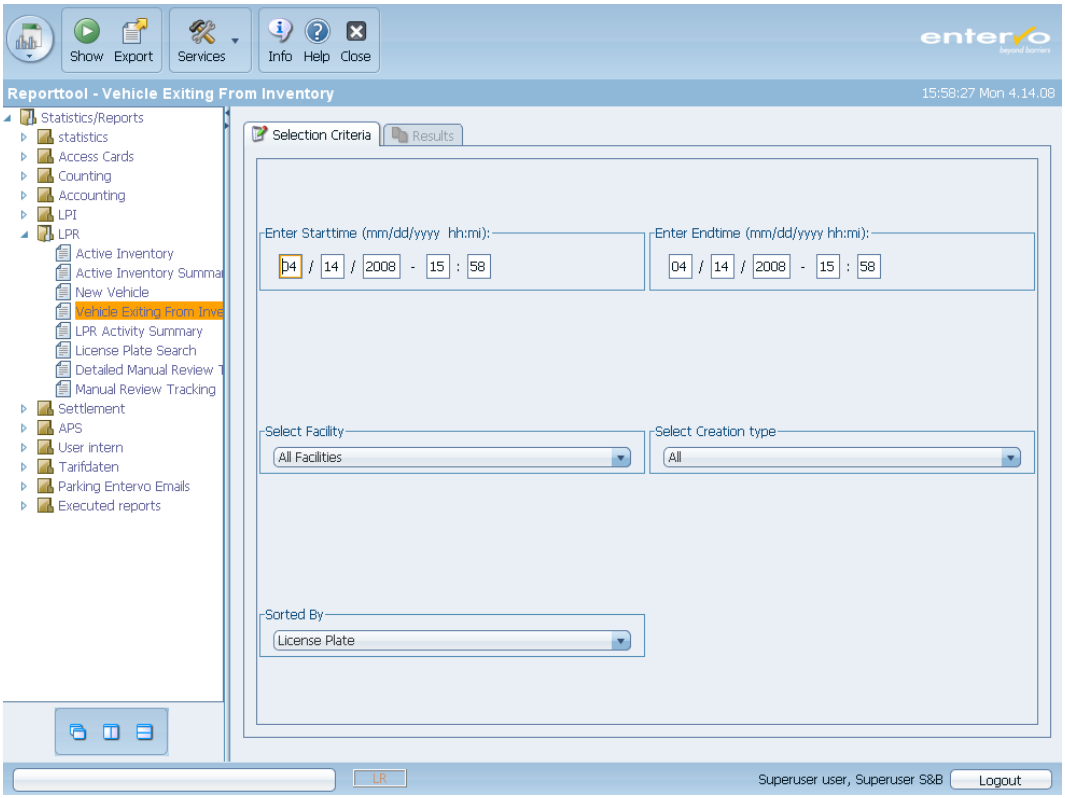
6.4.1 Short Description

This report provides a list of all the license plates added to the inactive License Plate Inventory (exited from a facility) over the specified date and time range. It includes license plate number, license plate state and type, ticket number, entry lane, entry date, time, exit lane, exit date, time and the cashier ID.

6.4.2 Source Data

The report is based on LPR inventory information.

6.4.3 Pre-Selection Screen



Within the Pre-Selection screen you enter the start and end date and select the facility and sorting order for which the report will be generated.

6.4.4 Report Sample

Printed : 10/21/2009 06:54

VEHICLE EXITING FROM INVENTORY (1.0.1)

Pre-Selection Screen Options
Enter Start Date : 10/20/2009 06:58
Enter End Date : 10/21/2009 06:58
Facility : All Facilities
Creation : All
Sort by : License Plate

State	Type	License Plate No.	LVL	ROW	SPC	Ticket ID	Entry Lane	Entry Date/Time	Exit Lane	Exit Date/Time	Cashier ID/ Name	Duration of Stay	Creation
	U	#NOLPN				8721011029233151360	102	08/21/09 04:12	-1	10/21/09 02:25	Exit unmanned	60 / 22:13:26	Auto Reconcile
NV	U	#NOLPN				8721011129289021080	112	10/16/09 00:35	812	10/20/09 18:17	Exit unmanned	4 / 17:42:28	Exit
NV	U	#NOLPN				8721011029280405650	102	10/07/09 11:16	202	10/20/09 15:35	Exitlane 202	13 / 04:19:21	Exit
NV	U	#NOLPN				8721011049293644410	104	10/20/09 17:54	202	10/20/09 17:55	Exitlane 202	0 / 00:01:45	Exit
NV	U	#NOLPN				8721011029293321720	102	10/20/09 08:56	202	10/20/09 21:18	Exitlane 202	0 / 12:22:06	Exit
NV	U	#NOLPN				8721011029291427310	102	10/18/09 11:52	202	10/20/09 22:23	Exitlane 202	2 / 10:31:11	Exit
NV	U	#NOLPN				8721011049293733070	104	10/20/09 20:21	203	10/20/09 20:32	Exitlane 203	0 / 00:10:37	Exit
NV	U	#NOLPN				8721011039290307860	103	10/17/09 08:31	203	10/20/09 22:30	Exitlane 203	3 / 13:57:15	Exit
NV	U	#NOLPN				8721011019293565700	101	10/20/09 15:42	801	10/20/09 15:45	5013/	0 / 00:02:11	Exit
NV	U	#NOLPN				8721011049293612200	104	10/20/09 17:00	801	10/20/09 17:02	5013/	0 / 00:01:41	Exit
NV	U	#NOLPN				8721011049290265100	104	10/17/09 07:21	801	10/20/09 18:14	5013/	3 / 10:52:13	Exit
NV	U	#NOLPN				8721011049293703430	104	10/20/09 19:32	801	10/20/09 19:39	5013/	0 / 00:07:12	Exit
NV	U	#NOLPN				8721011029290285390	102	10/17/09 07:55	801	10/20/09 22:17	5033/	3 / 14:22:11	Exit
NV	U	#NOLPN				8721011019292433950	101	10/19/09 12:03	801	10/20/09 22:45	5033/	1 / 10:42:26	Exit
NV	U	#NOLPN				8721011019290233830	101	10/17/09 06:29	801	10/20/09 23:00	5033/	3 / 16:30:36	Exit
NV	U	#NOLPN				8721011029289730980	102	10/16/09 20:18	802	10/20/09 09:00	5041/	3 / 12:41:54	Exit
NV	U	#NOLPN				8721011029289323100	102	10/16/09 08:58	802	10/20/09 18:43	5009/	4 / 09:45:03	Exit
NV	U	#NOLPN				8721011029292221960	102	10/19/09 06:09	802	10/20/09 19:26	5009/	1 / 13:16:13	Exit
NV	U	#NOLPN				8721011029291748360	102	10/18/09 20:47	802	10/20/09 21:36	5017/	2 / 00:48:55	Exit
NV	U	#NOLPN				8721011129292495090	112	10/19/09 13:45	812	10/20/09 10:03	Exit unmanned	0 / 20:18:33	Exit
NV	U	#NOLPN				8721011129293371370	112	10/20/09 10:18	812	10/20/09 10:21	Exit unmanned	0 / 00:02:07	Exit
NV	U	#NOLPN				8721011129293374350	112	10/20/09 10:23	812	10/20/09 13:48	Exit unmanned	0 / 03:24:11	Exit
NV	U	#NOLPN				8721011129293361640	112	10/20/09 10:02	812	10/20/09 13:49	Exit unmanned	0 / 03:46:51	Exit
NV	U	#NOLPN				8721011129293368400	112	10/20/09 10:14	812	10/20/09 13:50	Exit unmanned	0 / 03:36:49	Exit
NV	U	#NOLPN				8721011129293362450	112	10/20/09 10:06	812	10/20/09 13:52	Exit unmanned	0 / 03:48:07	Exit
NV	U	#NOLPN				8721011039290225080	103	10/17/09 06:15	202	10/20/09 10:31	Exitlane 202	3 / 04:16:23	Exit
NV	U	0003YG				8721011049287310060	104	10/14/09 08:36	802	10/20/09 18:39	5009/	6 / 10:02:14	Exit
NV	U	004UPZ				8721011039292452810	103	10/19/09 12:36	802	10/20/09 09:37	5041/	0 / 21:02:25	Exit
NV	U	009UTR				8721011019289206830	101	10/16/09 05:44	202	10/20/09 23:28	Exit1	4 / 17:43:50	Exit
NV	U	011VNC				8721011019293364340	101	10/20/09 10:07	801	10/20/09 19:15	5013/	0 / 09:08:04	Exit
NV	U	022VRG				8721011049293453890	104	10/20/09 12:36	801	10/20/09 13:15	5019/	0 / 00:39:26	Exit
NV	U	023KZG				8721011019288394130	101	10/15/09 10:56	801	10/20/09 15:42	5013/	5 / 04:45:59	Exit
NV	U	024PYE				8721011029290167460	102	10/17/09 04:39	802	10/20/09 13:06	5041/	3 / 08:27:51	Exit
NV	U	0298PYI				8721011029293316260	102	10/20/09 09:20	802	10/20/09 09:46	5041/	0 / 00:25:36	Exit
NV	U	0326				8721011019280169700	101	10/07/09 04:42	801	10/20/09 14:13	5019/	13 / 09:30:59	Exit
NV	U	032PBL				8721011029289457620	102	10/16/09 12:42	802	10/20/09 20:24	5009/	4 / 07:41:48	Exit

Page 1 (VEHICLE EXITING FROM INVENTORY 1.0.1)

6.4.5 Description of Each Column

Ref.	Column Header	Content
A	State	State information of license plate
B	Type	Additional vehicle information
C	License Plate No.	License plate number associated with the entry transaction.
D	LVL	If License Plate Inventory is used: Level on which the car is parked in the facility.
E	ROW	If License Plate Inventory is used: Row in which the car is parked.
F	SPC	If License Plate Inventory is used: Parking space number
G	Ticket ID	Ticket EPAN If the ticket EPAN refers to an Access Card the entire row will be in bold type.
H	Entry Lane	Identification number of the entry device associated with the entry transaction and license plate number
I	Entry Date/Time	Date and time of entry transaction
K	Exit Lane	Identification number of the exit device associated with the exit transaction and license plate number
L	Exit Date/Time	Date and time of exit transaction
M	Cashier ID	Type of exit, exit ID number, or cashier name and number
N	Duration Of Stay	Number of days, hours, minutes and seconds the vehicle is recorded in the inventory database as of the chosen Pre-Selection date.
O	Creation	Entry device, Manual intervention or All based on **Creation** choice in the Pre-Selection screen.

6.5 Vehicle License Plate Search Report

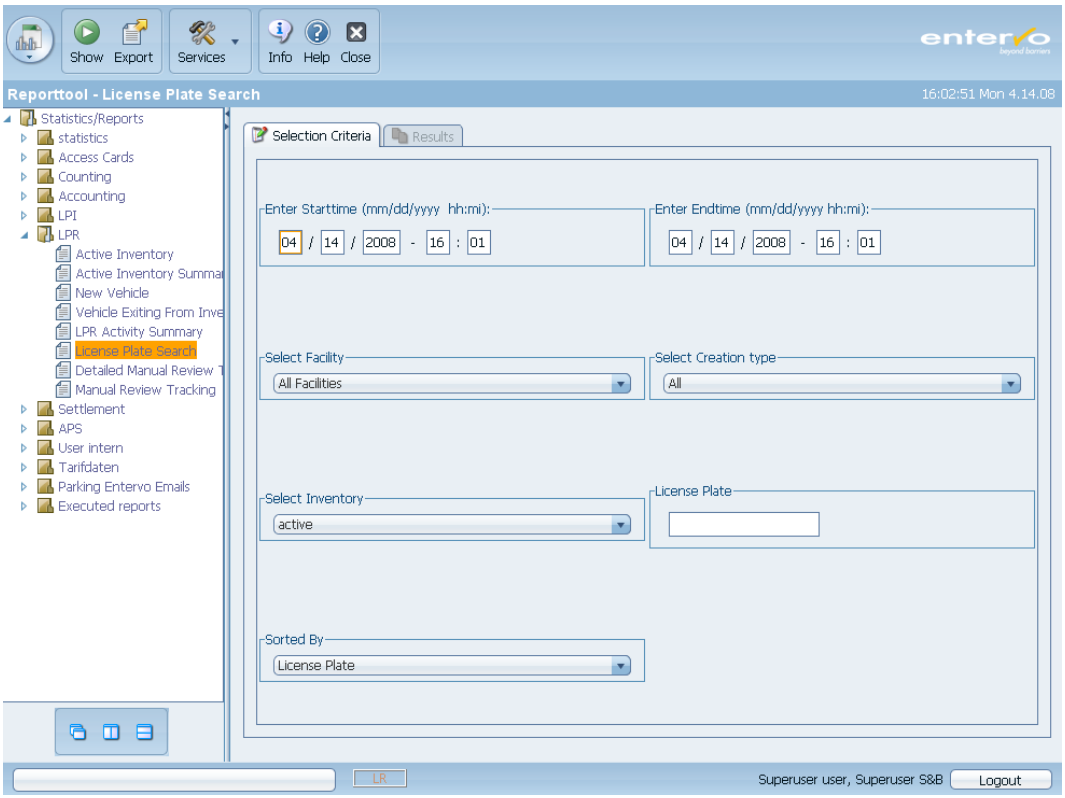
6.5.1 Short Description

This report provides the user with a list of license plates in the inactive and active License Plate Inventory on the selected date and within the time range specified. The report includes license plate number, license plate state and type, ticket number, entry lane, entry date and time, exit lane, exit date, time and the cashier ID. This represents a complete description of the parking transaction from the inventory's point of view.

6.5.2 Source Data

The report is based on transactions and LPR inventory information.

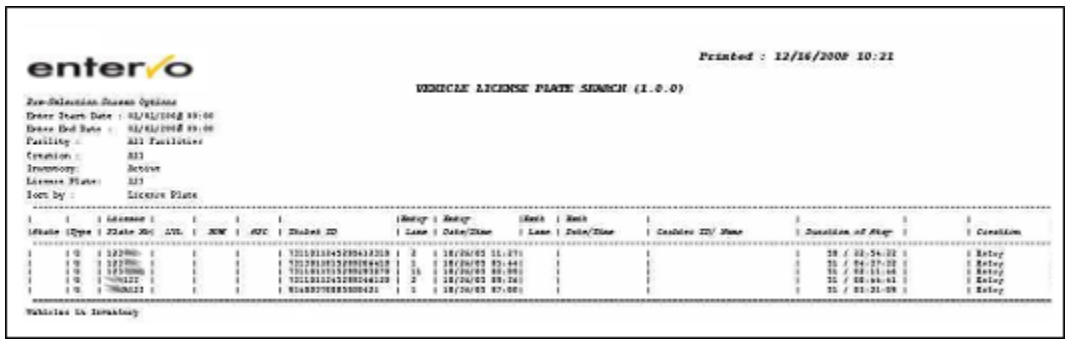
6.5.3 Pre-Selection Screen



Within the Pre-Selection screen you can choose the start and end date, facility, and sorting order for which the report will be generated.

In additon you can enter one specific license plate number for which you want to search.

6.5.4 Report Sample



6.5.5 Description of Each Column

Ref.	Column Header	Content
A	License State	State information of license plate
B	Type	Additional vehicle information
C	Plate No.	License plate number associated with the entry transaction.
D	LVL	License Plate Inventory: Level on which the car is parked in the facility.
E	ROW	License Plate Inventory: Row in which the car is parked.
F	SPC	License Plate Inventory: Parking space number.
G	Ticket ID	Ticket EPAN If the ticket EPAN refers to an Access Card the entire row will be in bold type.
H	Entry Lane	Identification number of the entry device associated with the entry transaction and license plate number
I	Entry Date/Time	Date and time of entry transaction
K	Exit Lane	Identification number of the exit device associated with the exit transaction and license plate number
L	Exit Date/Time	Date and time of exit transaction
M	Cashier ID	Type of exit, exit ID number or cashier name and number.
N	Duration of Stay	Number of days, hours, minutes and seconds the vehicle is recorded in the inventory

Ref.	Column Header	Content
		database as of the chosen Pre-Selection date
O	Creation	Entry device, Manual intervention or All, based on Creation choice in the Pre-Selection screen.

6.6 LPR Activity Summary

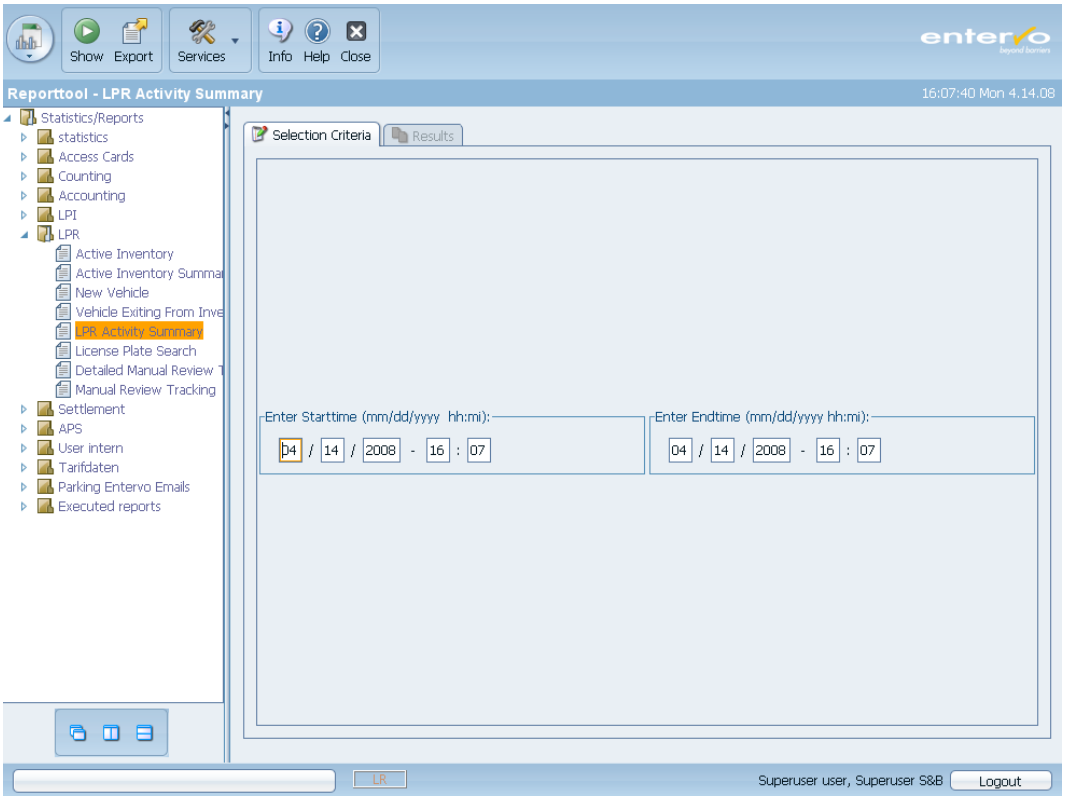
6.6.1 Short Description

This report provides the user with an overview of the workload of each lane and how the requests are handled by the Image Review Workstations.

6.6.2 Source Data

The report is based on LPR inventory information.

6.6.3 Pre-Selection Screen



Within the Pre-Selection screen you can choose the start and end date for which the report will be generated.

6.6.4 Report Sample

entervo beyond barriers

Printed : 10/21/2009 06:53

LPR ACTIVITY SUMMARY (1.2.1)

Pre-Selection Screen Options
Enter Start Date : 10/20/2009 06:57:00
Enter End Date : 10/21/2009 06:57:59

Lane	# of Total Transactions	# of Necessary Reviews	% of Total Reviews	# of Processed Reviews	# of Reviews with Timeout	# of no available Workstation
Economy Lot						
Exit Lane 802	87	10	11.49	10	0	0
Entry Lane 103	61	20	32.79	20	0	0
Entry Lane 104	65	59	90.77	59	0	0
Exit Lane 203	28	28	100.00	28	0	0
Subtotal Economy Lot	**241**	**117**	**48.55**	**117**	**0**	**0**
Gold Garage LT						
Entry Lane 135	195	67	34.36	67	0	0
Entry Lane 136	61	20	32.79	20	0	0
Entry Lane 137	65	59	90.77	59	0	0
Entry Lane 138	0	0	0.00	0	0	0
Entry Lane 139	0	0	0.00	0	0	0
Entry Lane 140	0	0	0.00	0	0	0
Subtotal Gold Garage LT	**321**	**146**	**45.48**	**146**	**0**	**0**
Gold Garage ST						
Entry Lane 134	122	54	44.26	54	0	0
Exit Lane 231	131	12	9.16	12	0	0
Exit Lane 832	131	12	9.16	12	0	0
Exit Lane 232	87	10	11.49	10	0	0
Exit Lane 833	87	10	11.49	10	0	0
Exit Lane 233	0	0	0.00	0	0	0
Exit Lane 234	0	0	0.00	0	0	0
Entry Lane 131	0	0	0.00	0	0	0
Exit Lane 235	37	9	24.32	9	0	0
Entry Lane 132	0	0	0.00	0	0	0

Page 1 (LPR ACTIVITY SUMMARY 1.2.1)

Lane	# of Total Transactions	# of Necessary Reviews	% of Total Reviews	# of Processed Reviews	# of Reviews with Timeout	# of no available Workstation
Exit Lane 236	92	92	100.00	92	0	0
Entry Lane 133	0	0	0.00	0	0	0
Exit Lane 831	28	28	100.00	28	0	0
Subtotal Gold Garage ST	**715**	**227**	**31.75**	**227**	**0**	**0**
Remote Lot						
Entry Lane 111	61	20	32.79	20	0	0
Entry Lane 112	65	59	90.77	59	0	0
Exit Lane 211	0	0	0.00	0	0	0
Exit Lane 811	37	9	24.32	9	0	0
Exit Lane 812	92	92	100.00	92	0	0
Subtotal Remote Lot	**255**	**180**	**70.59**	**180**	**0**	**0**
Terminal 2						
Entry Lane 122	122	54	44.26	54	0	0
Exit Lane 221	87	10	11.49	10	0	0
Exit Lane 222	0	0	0.00	0	0	0
Entry Lane 121	0	0	0.00	0	0	0
Subtotal Terminal 2	**209**	**64**	**30.62**	**64**	**0**	**0**
Grand Total	**1,741**	**734**	**42.16**	**734**	**0**	**0**

Page 2 (LANE ACTIVITY SUMMARY 1.2.1)

6.6.5 Description of Each Column

Ref.	Column Header	Content
A	Lane	Lane Name
B	# Total Transactions	Amount of LPR transactions for that lane
C	#Necessary Reviews	Amount of reviews that were necessary.
D	% Total Reviews	Resulting percentage (Necessary Reviews * 100) / Total Transactions
E	# Processed Reviews	Amount of reviews that were handled.
F	# Reviews with Timeout	Amount of reviews that were not handled due to timeouts.
G	# No Available Workstations	Amount of reviews that were not handled due to unavailable workstations.

6.7 Manual Review Tracking Report

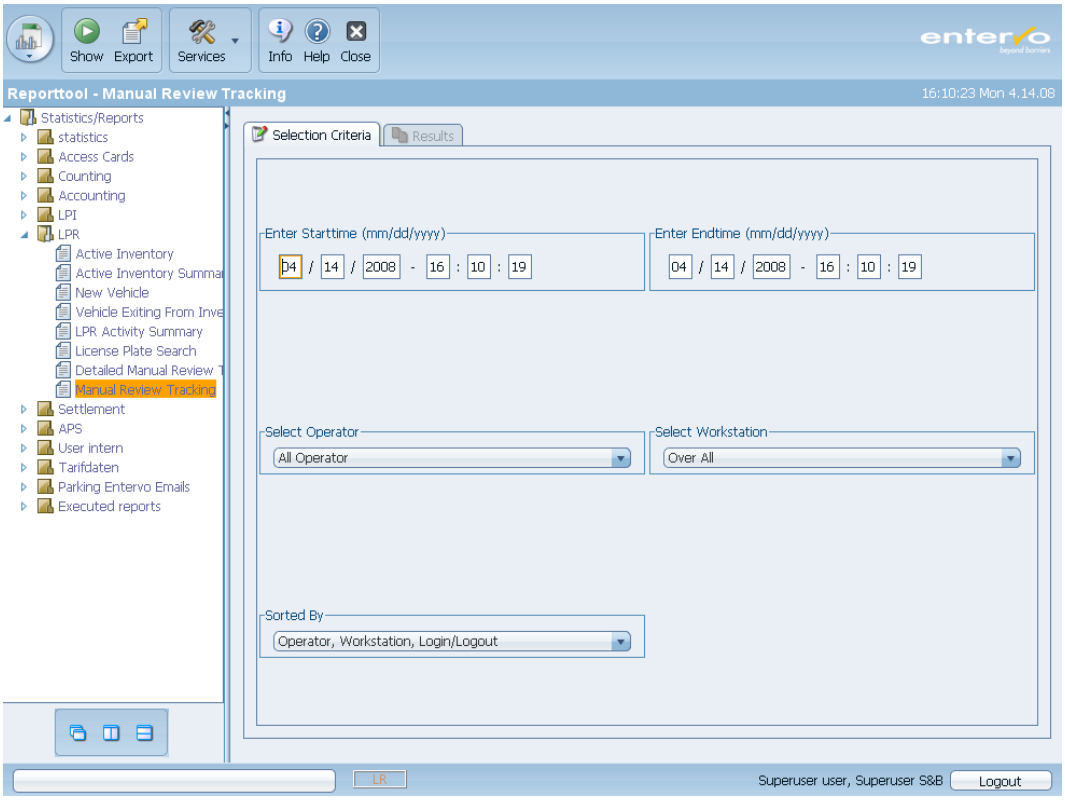
6.7.1 Short Descripton

This report is used to track image review requests and responses for the system. It provides the user with a list of request date and time, ICP (Image Capture Processor) name, ICP facility location (taken from the administration screen), ICP lane number, name of the Image Review Workstation and supervisor who responded to the request and the response date and time. The report can be generated for one parking facility or 'All parking facilities'.

6.7.2 Source Data

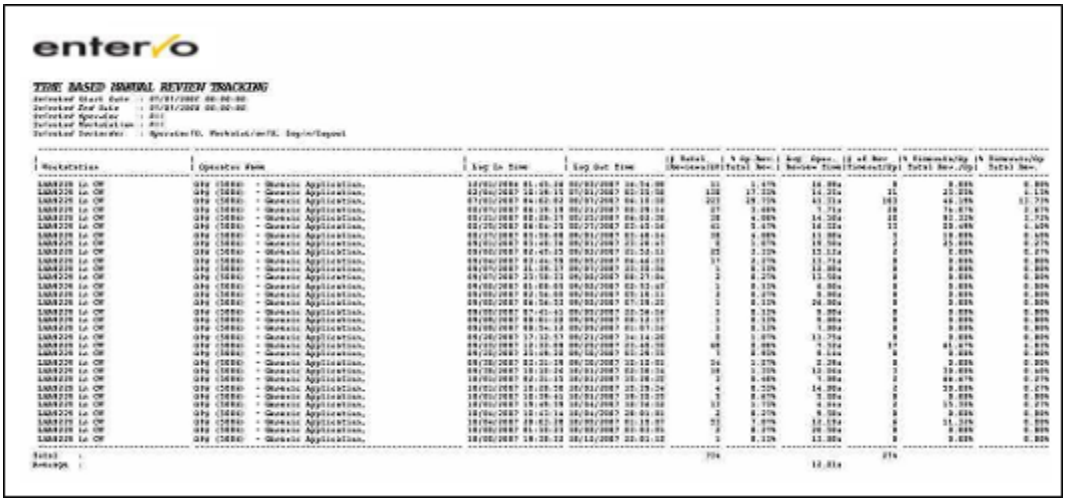
This report is based on transactions and LPR inventory information.

6.7.3 Pre-Selection Screen



Within the Pre-Selection screen you can choose the start and end date and the facility for which the report will be generated.

6.7.4 Report Sample



6.7.5 Description of Each Column

Ref.	Column Header	Content
A	Workstation	Workstation where the review was done
B	Image Review Staff	Operator who processed the reviews
C	Login Time	Operator login time on this workstation
D	Log Out Time	Operator logout time on this workstation
E	Total Reviews	Total reviews of this operator/workstation/shift
F	% of Total Reviews	Percentage of reviews from all reviews listed
G	Avg Operator Review Time	The average response time per review of this operator
H	# of Timeouts /Op	Number of timeouts of this operator
I	% Timeouts Op / Total Reviews Op	Percentage of timeouts of the total reviews of this operator
K	% Timeouts / Total Reviews Op	Percentage of timeouts of the total reviews of all listed operators to the current operator

6.8 Detailed Manual Review Tracking Report

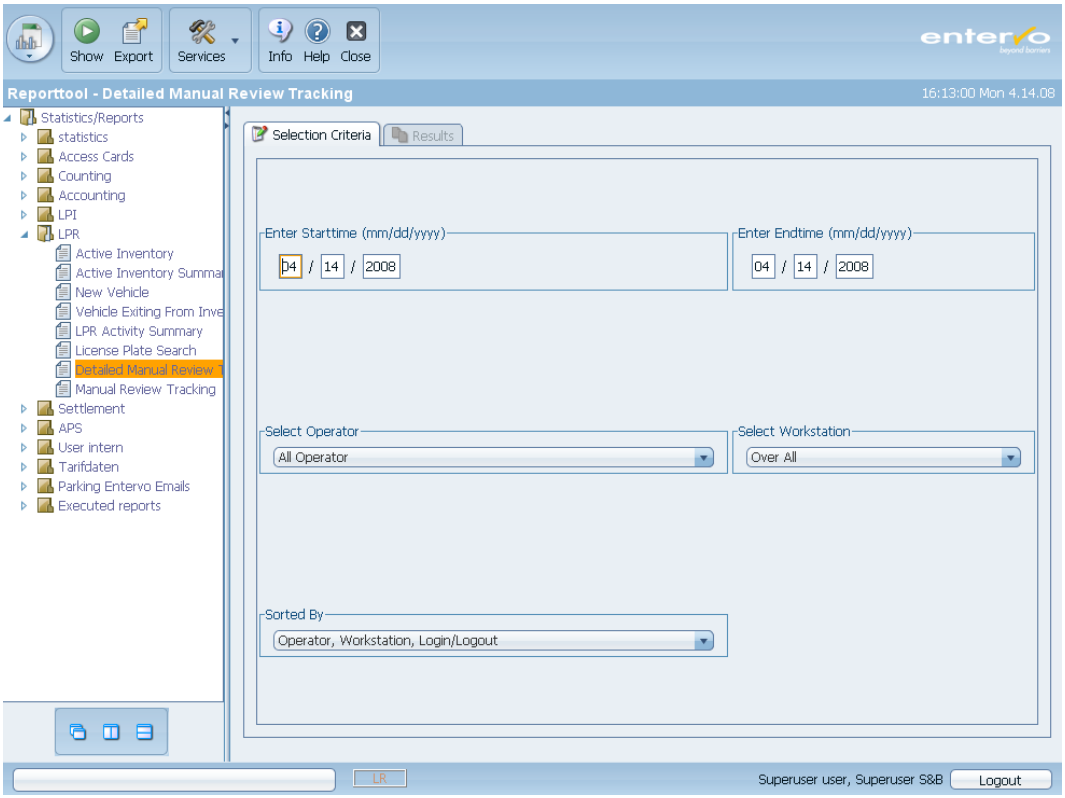
6.8.1 Short Description

This report is used to track image review requests and responses for the system. It provides a list of request dates and times, ICP (Image Capture Processor) names, ICP facility location, ICP lane number, name of the Image Review Workstation and the response date and time. The report can be generated for one parking facility or 'All parking facilities'.

6.8.2 Source Data

This report is based on LPR inventory information.

6.8.3 Pre-Selection Screen



6.8.4 Report Sample

entervo
beyond barriers

Printed : 10/21/2009 07:01

Detailed Manual Review Tracking Report (2.7.7)

Pre-Selection Screen Options
Enter Start Date : 10/20/2009 00:00:00
Enter End Date : 10/21/2009 23:59:59
Workstation : Over All
Sort by : Facility, Lane

Request Date/Time	ICP	Facility	Lane	LPN	Response Date/Time	Review Reason
10/20/2009 07:20:46	172.17.252.70	Economy Lot	Entry Lane 103	DT54691CCDO	10/20/2009 07:20:53	ManualReviewForLowQuality_Entry
10/20/2009 07:25:17	172.17.252.70	Economy Lot	Entry Lane 103	DT54691CCDO	10/20/2009 07:25:24	ManualReviewForLowQuality_Entry
10/20/2009 09:20:05	172.17.252.70	Economy Lot	Entry Lane 103	DT54691CCDO	10/20/2009 09:20:13	ManualReviewForLowQuality_Entry
10/20/2009 10:18:06	172.17.252.70	Economy Lot	Entry Lane 103	DT54691CCDO	10/20/2009 10:18:11	ManualReviewForLowQuality_Entry
10/20/2009 06:37:25	172.17.252.70	Economy Lot	Entry Lane 103	DT54691CCDO	10/20/2009 06:37:32	ManualReviewForLowQuality_Entry
10/20/2009 06:36:17	172.17.252.70	Economy Lot	Entry Lane 103	DT54691CCDO	10/20/2009 06:36:25	ManualReviewForLowQuality_Entry
10/20/2009 10:34:26	172.17.252.70	Economy Lot	Entry Lane 103	DT54691CCDO	10/20/2009 10:34:31	ManualReviewForLowQuality_Entry
10/20/2009 09:40:04	172.17.252.70	Economy Lot	Entry Lane 103	DT54691CCDO	10/20/2009 09:40:15	ManualReviewForLowQuality_Entry
10/20/2009 07:46:37	172.17.252.72	Economy Lot	Entry Lane 104	DT54691CCDO	10/20/2009 07:46:58	ManualReviewForLowQuality_Entry
10/20/2009 06:39:27	172.17.252.72	Economy Lot	Entry Lane 104	DT54691CCDO	10/20/2009 06:39:41	ManualReviewForLowQuality_Entry
10/20/2009 08:44:10	172.17.252.72	Economy Lot	Entry Lane 104	DT54691CCDO	10/20/2009 08:44:30	ManualReviewForLowQuality_Entry
10/20/2009 09:06:43	172.17.252.72	Economy Lot	Entry Lane 104	DT54691CCDO	10/30/2009 09:07:01	ManualReviewForLowQuality_Entry
10/20/2009 09:08:29	172.17.252.72	Economy Lot	Entry Lane 104	DT54691CCDO	10/20/2009 09:08:44	ManualReviewForLowQuality_Entry
10/20/2009 09:11:57	172.17.252.72	Economy Lot	Entry Lane 104	DT54691CCDO	10/20/2009 09:12:13	ManualReviewForLowQuality_Entry
10/20/2009 09:54:46	172.17.252.72	Economy Lot	Entry Lane 104	DT54691CCDO	10/20/2009 09:54:59	ManualReviewForLowQuality_Entry
10/20/2009 10:08:02	172.17.252.72	Economy Lot	Entry Lane 104	DT54691CCDO	10/20/2009 10:08:19	ManualReviewForLowQuality_Entry
10/20/2009 12:26:40	172.17.252.72	Economy Lot	Entry Lane 104	DT54691CCDO	10/20/2009 12:26:53	ManualReviewForLowQuality_Entry
10/20/2009 12:36:39	172.17.252.72	Economy Lot	Entry Lane 104	DT54659	10/20/2009 12:37:02	ManualReviewForLowQuality_Entry
10/20/2009 12:58:56	172.17.252.72	Economy Lot	Entry Lane 104	172.17.252.82	TimeOut	ManualReviewForLowQuality_Entry
10/20/2009 13:19:41	172.17.252.72	Economy Lot	Entry Lane 104	DT54659	10/20/2009 13:20:00	ManualReviewForLowQuality_Entry
10/20/2009 13:23:07	172.17.252.72	Economy Lot	Entry Lane 104	DT54659	10/20/2009 13:23:45	ManualReviewForLowQuality_Entry
10/20/2009 13:27:34	172.17.252.72	Economy Lot	Entry Lane 104	DT54659	10/20/2009 13:27:50	ManualReviewForLowQuality_Entry
10/20/2009 06:31:17	172.17.252.72	Economy Lot	Entry Lane 104	DT54691CCDO	10/20/2009 06:31:35	ManualReviewForLowQuality_Entry
10/20/2009 14:06:54	172.17.252.72	Economy Lot	Entry Lane 104	DT54691CCDO	10/20/2009 14:07:32	ManualReviewForLowQuality_Entry
10/20/2009 08:39:47	172.17.252.72	Economy Lot	Entry Lane 104	DT54691CCDO	10/20/2009 08:40:05	ManualReviewForLowQuality_Entry
10/20/2009 08:31:47	172.17.252.68	Economy Lot	Exit Lane 802	DT54691CCDO	10/20/2009 08:32:11	ManualReviewForLowQuality_Entry
10/20/2009 06:50:39	172.17.252.68	Economy Lot	Exit Lane 802	DT54691CCDO	10/20/2009 06:50:54	ManualReviewForLowQuality_Entry
10/20/2009 09:05:14	172.17.252.68	Economy Lot	Exit Lane 802	DT54691CCDO	10/20/2009 09:09:32	ERRRuFoundLowQF
10/20/2009 09:04:33	172.17.252.68	Economy Lot	Exit Lane 802	DT54691CCDO	10/20/2009 09:04:51	ManualReviewForLowQuality_Entry
10/20/2009 09:14:28	172.17.252.68	Economy Lot	Exit Lane 802	DT54691CCDO	10/20/2009 09:14:35	ManualReviewForLowQuality_Entry
10/20/2009 09:40:07	172.17.252.68	Economy Lot	Exit Lane 802	DT54691CCDO	10/20/2009 09:40:28	ManualReviewForLowQuality_Entry
10/20/2009 09:54:47	172.17.252.68	Economy Lot	Exit Lane 802	DT54691CCDO	10/20/2009 09:55:18	ManualReviewForLowQuality_Entry
10/20/2009 10:13:36	172.17.252.68	Economy Lot	Exit Lane 802	DT54691CCDO	10/20/2009 10:13:43	ManualReviewForLowQuality_Entry
10/20/2009 10:38:50	172.17.252.68	Economy Lot	Exit Lane 802	DT54691CCDO	10/20/2009 10:38:54	ManualReviewForLowQuality_Entry
10/20/2009 11:59:47	172.17.252.68	Economy Lot	Exit Lane 802	DT54691CCDO	10/20/2009 12:00:00	ManualReviewForLowQuality_Entry
10/20/2009 12:00:23	172.17.252.68	Economy Lot	Exit Lane 802	DT54691CCDO	10/20/2009 12:00:48	ManualReviewForLowQuality_Entry
10/20/2009 12:16:16	172.17.252.68	Economy Lot	Exit Lane 802	DT54691CCDO	10/20/2009 12:16:34	ManualReviewForLowQuality_Entry

Page 2 (DETAILED MANUAL REVIEW TRACKING REPORT 1.0.1)

6.8.5 Description of Each Column

Ref.	Column Header	Content
A	Request Date/Time	Date and Time the review was requested
B	ICP	IP address of the requesting Image Capture Processor
C	Facility	Name of facility to which ICP is connected
D	Lane	Name of lane to which ICP is connected
E	LPIW	IP address to which ICP is connected
F	Response Date Time	Date and Time request was answered
G	Review Reason	Reason for this request

7 License Plate Inventory

7.1 LPI Lookup

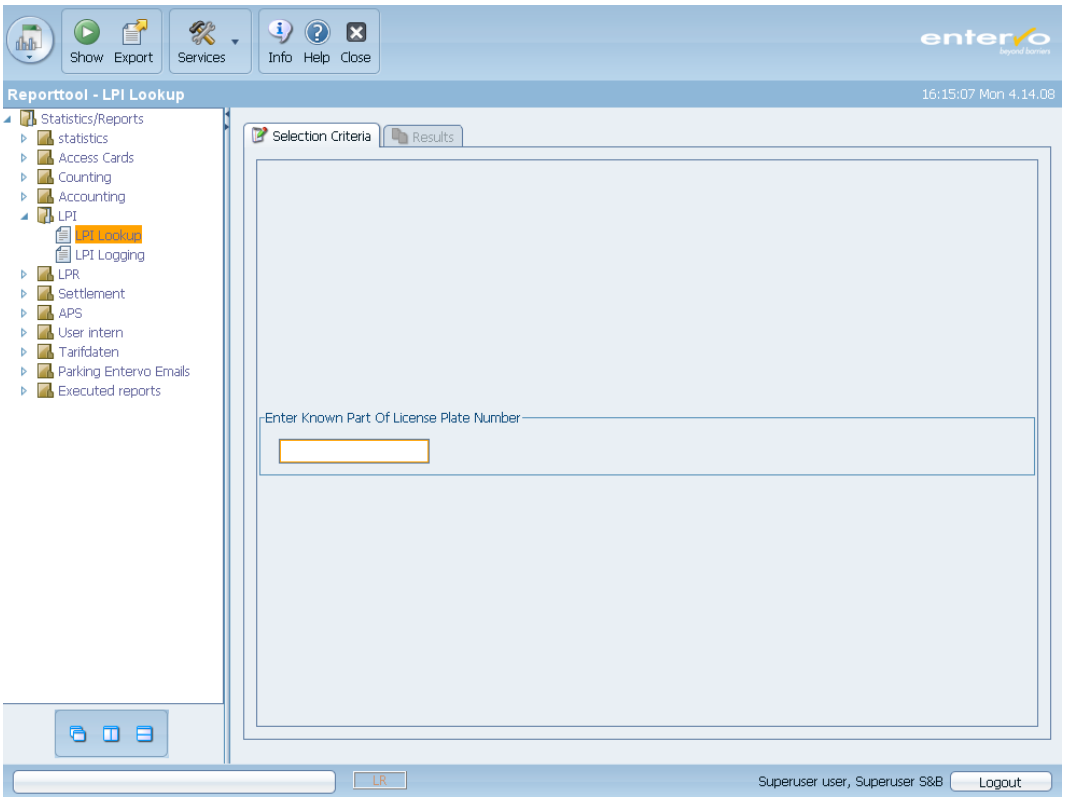
7.1.1 Short Description

This report provides the user with the ability to enter a license plate (or part of it) to indicate where the car is currently parked. Additionally, it shows where the license plate has been previously parked.

7.1.2 Source Data

This report is based on LPI information.

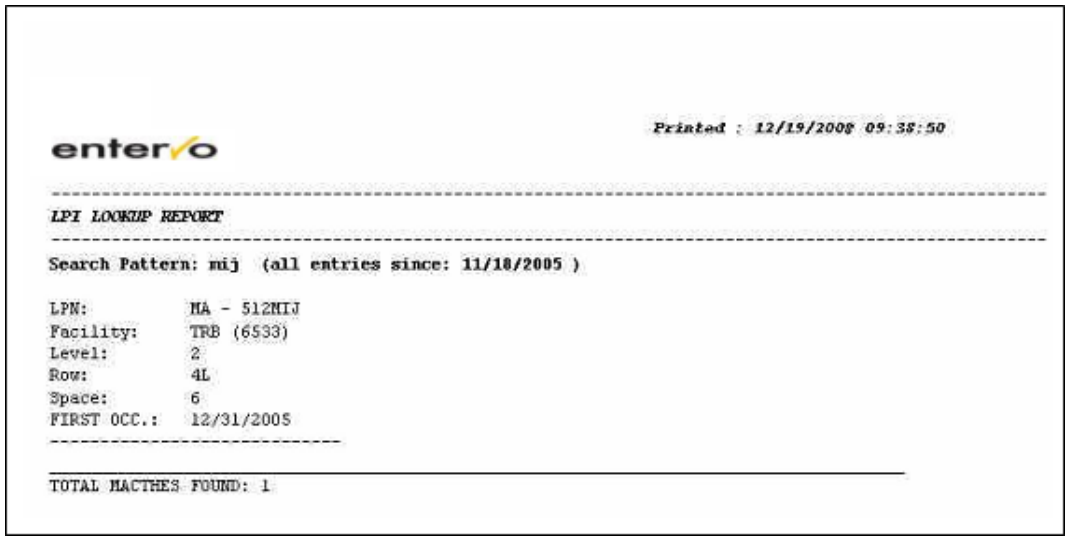
7.1.3 Pre-Selection Screen



Within the Pre-Selection screen you can enter the license plate number (or a part of it).

7.1.4 Report Sample

This report will be printed on US letter size paper in portrait format.



Printed : 12/19/2008 09:38:50

entervo

LPI LOOKUP REPORT

Search Pattern: mij (all entries since: 11/18/2005)

LPN:	MA - 512MIJ
Facility:	TRB (6533)
Level:	2
Row:	4L
Space:	6
FIRST OCC.:	12/31/2005

TOTAL MACTHES FOUND: 1

7.1.5 Description of Each Column

Ref.	Column Header	Content
A	LPN	The complete license plate
B	Facility	Facility where car is (was) parked
C	Level	Level where car is (was) parked
D	Row	Row where car is (was) parked
E	Space	Space where car is (was) parked
F	First Occurrence	Date when car was first recorded

7.2 LPI Log

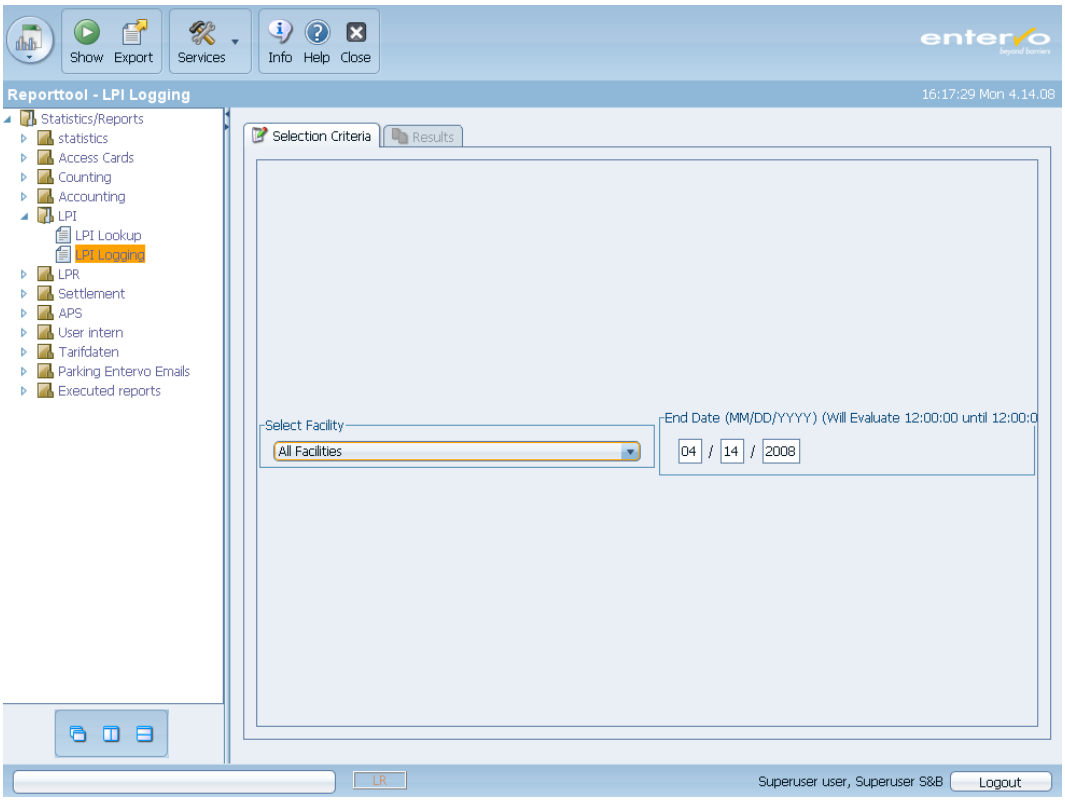
7.2.1 Short Description

This report will show all LPI entries done by users for the pre-selected date.

7.2.2 Source Data

The report is based on transactions and LPR inventory information.

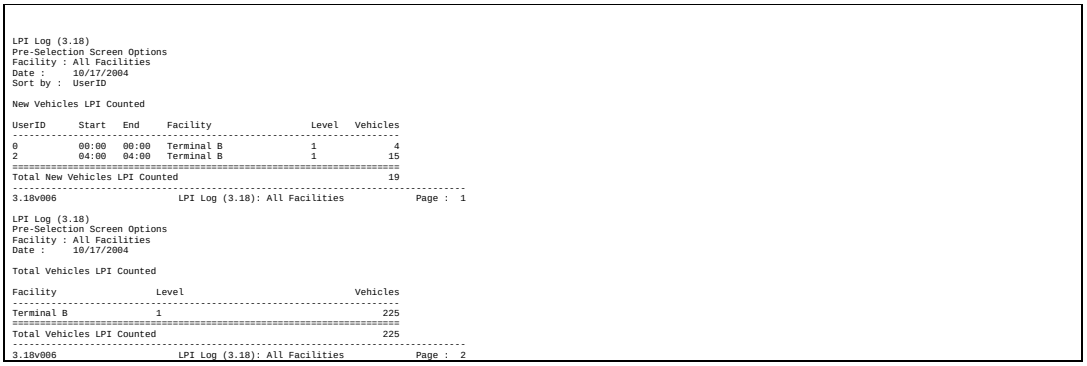
7.2.3 Pre-Selection Screen



Within the Pre-Selection screen you can choose a date, facility and sorting order for which the report will be generated.

7.2.4 Report Sample

This report will be printed on US letter size paper in landscape format.



```
LPI Log (3.18)
Pre-Selection Screen Options
Facility : All Facilities
Date :     10/17/2004
Sort by :  UserID

New Vehicles LPI Counted

UserID      Start   End     Facility                Level   Vehicles
-------------------------------------------------------------------
0           00:00   00:00   Terminal B              1             4
2           04:00   04:00   Terminal B              1            15
===================================================================
Total New Vehicles LPI Counted                                   19
-------------------------------------------------------------------------------
3.18v006                    LPI Log (3.18): All Facilities            Page :  1

LPI Log (3.18)
Pre-Selection Screen Options
Facility : All Facilities
Date :     10/17/2004

Total Vehicles LPI Counted

Facility                Level                           Vehicles
-------------------------------------------------------------------
Terminal B              1                                    225
===================================================================
Total Vehicles LPI Counted                                   225
-------------------------------------------------------------------------------
3.18v006                    LPI Log (3.18): All Facilities            Page :  2
```

7.2.5 Description of Each Column

Ref.	Column Header	Content
A	UserID	User ID
B	Start	Recording time of the first car of the facility/level
C	End	Recording time of the last car of the facility/level
D	Facility	Specific facility of the parking area
E	Level	Parking level
F	Vehicles	Number of vehicles

APPENDIX C – PARKING GARAGE MAINTENANCE

Recommended Maintenance Procedures

The recommended maintenance procedures listed in this appendix are based on direct ***Kimley-Horn and Associates, Inc.*** experience and the recommendations presented in the National Parking Association (NPA) Parking Garage Maintenance Manual. For ease of reference, the procedures have been divided into categories and are presented in the same order as used in the NPA Parking Garage Maintenance Manual.

7.01. CLEANING

Maintaining a clean facility is important because it affects the overall appearance of the structure, promotes a good reputation and increases the user's perception of safety. Likewise, poor housekeeping invites disregard for proper waste disposal and may indicate an increased tolerance for vandalism or abuse of the facility. It is our experience that the increased user satisfaction and facility reputation often offset the costs of keeping the facility clean. Generally, the membrane waterproofing, sealant, and expansion joint warranties require that the structure be maintained in a clean, safe and serviceable condition. As a result, we recommend that the maintenance program should include the following housekeeping and preventative maintenance items

Housekeeping Items:

1) Sweep weekly all parking floor areas
   - One of the most frequently overlooked aspects of parking garage maintenance is proper floor cleaning. If not removed, debris will eventually end up in the floor drains and drain lines and cause slow or blocked drainage.
   - Sweeping can be done either with hand brooms or sweeping machines designed for parking garage floor slabs. All sweeping equipment must first be reviewed "in action" to identify any sharp or rigid components which might contact the traffic bearing membrane or expansion joints and cause damage. Sweeping machines should also be reviewed for weight to be sure that it is less than the design live loads. Sweeping machines should be checked regularly to confirm that they are not causing damage.
2) Sweep or mop elevator lobbies, attendant booths, entrance and exit lanes, and elevators daily. Stairs should be cleaned daily and more frequently if they are heavily used.
   - Stair and elevator lobbies are highly visible areas and will experience high volumes of patron foot traffic. These areas should be maintained in a clean and safe condition at all times.

Periodically sweep or wash out expansion joints and joint sealants.

- Debris and dirt accumulation within expansion joint and/or joint sealant recesses can hasten deterioration of the joint systems.
- Stones, glass, and miscellaneous debris trapped against the expansion joint or joint sealant may puncture the gland/sealant during repeated pounding from tires and the continued expansion and contraction of the gland with seasonal structural movement.

4) Windows in attendant booths should be washed daily. Other windows in the stairways, elevator cabs, and elevator shafts should be cleaned once a month to once a quarter, depending on their conditions and accessibility.
5) Stair enclosures, doors, and frames should be cleaned monthly. The elevator floors and walls should be cleaned monthly.
6) Trash receptacles should be emptied daily:
    - Clearly marked trash receptacles should be placed at areas of pedestrian traffic flow such as the stair and elevator lobbies, etc. The absence of trash receptacles, or poor maintenance and collection of trash will tend to encourage littering.
7) Floor drains should be cleaned out weekly.
    - Debris can buildup in floor drains and drainpipes causing slow or blocked drainage. Ponding water, which will occur with blocked drains, creates a slip hazard and can affect the durability of the concrete.
8) Grease and oil spots that build up in parking stalls, drive lanes and entry/exit locations should be cleaned at least twice a year. Large spots should be cleaned immediately and other spots should be cleaned as soon as significant “build up” occurs.
9) Signs should be cleaned with a mild detergent semi-annually to maintain appearance and visibility of the signs.

10) Parking control equipment should be cleaned weekly.

Preventative Maintenance Items:

1) Semi-annual wash down of the floor slabs and lower vertical surfaces of walls and columns with high volume low-pressure water source such as a fire hose.
    - Preceded by sweeping, a wash down of the garage will help clean the deck of debris.
    - Before and after washing floors, all drains should be checked to see that they are functioning properly. Sand washed off floors can clog drains. Temporary burlap filters may be used to prevent sand from entering drains, but must be removed immediately after washing.
    - A high-pressure, low volume water source (maximum 2,500 psi) may be used to remove spots the fire hose was unable to clean. This high-pressure method should first be reviewed to confirm that the high-pressure water would not cause damage to the traffic bearing membrane, stripes, sealants, expansion joints, or concrete, etc.
    - After several months of vehicular traffic, the traffic striping will become less visible due to an accumulation of dirt and debris. Cleaning during the wash down should help to “brighten” the striping.
2) More frequent (monthly) washing should be considered at high traffic areas and at any areas where slower drainage is observed.
    - During winter months washing can be performed whenever moderate temperatures occur.
3) The underside of each level should be reviewed during each wash down to identify any leaking through the slab system.

- Leak locations should be identified on plans and sealants repaired as necessary as soon as possible.

7.02. DOORS AND HARDWARE

1) **Lubricate all doors.** Lubrication of doors and related hardware should be performed according to manufacturer's recommendations or at least semi-annually.

   Frequency: 6 months

   Procedure: According to Manufacturer's recommendations

   Supplies: Lubricant and rags

2) **Check operation of all doors.** All door hardware should be reviewed to assure proper operation. When a malfunction is noted, it should be corrected immediately to maintain the safety and security of the garage.

   Frequency: 6 months

   Procedure: According to Manufacturer's recommendations

   Supplies: Flashlight

3) **Checks doors for signs of corrosion.** Proper cleaning and painting of the doors is important to maintain an attractive entrance to the facility. Inspections should be scheduled to review all doors and hardware for signs of corrosion and damage.

   Other preventative maintenance includes painting, which is addressed in Section 7.06.

   Frequency: 6 months

   Procedure: According to Manufacturer's recommendations

   Supplies: Flashlight, wire brushes, rags, and paint supplies

7.03. ELECTRICAL SYSTEMS

1) **Inspect lights for proper operation.** A properly illuminated facility promotes safer travel within the facility and provides a more secure feeling among its users. Daily inspection of luminaries (complete lighting unit), lamps, lenses, emergency lights, ballasts, electrical conduit, light fixture attachment to structure, distribution panels, time controls, etc. should be scheduled to ensure adequate illumination within the facility at all times. Defective luminaries should be repaired or replaced immediately. A properly illuminated facility promotes safer travel within the facility and tends to instill a more secure feeling among users.

   Frequency: Weekly

   Procedure: According to Manufacturer's recommendations

   Supplies: Ladder

2) **Clean and replace lights.** Uniformity of lighting is a very important safety concern in parking structures. Scheduled cleaning of lights including lenses and replacement of lamps should be set up to maximize the uniformity of the lighting systems. Lamps should

be replaced in groups at the end of their average rated life (refer to lamp cut sheets and local lamp supplier for average rated life). Lamp manufacturer studies indicate that energy costs may be reduced if lamps are replaced in groups before they burnout.

Illumination reduction also occurs due to dirt and dust that accumulates both inside and outside of the light fixture. Annual cleaning of light fixtures is recommended in order to maintain adequate luminance. Replacement of the acrylic lenses may be necessary if "yellowing" of the plastic is reducing the light output

Frequency: Every 12 months

Procedure: According to Manufacturer's recommendations for replacement of lamps

Supplies: Tool kit, ladder, lamps, recommended lens cleaner, and rags

3) **Inspect electrical conduits and panel boxes.** Electrical conduits and distribution panels should be inspected monthly to determine if they are functioning properly. Any water leaking into the conduit or panel boxes must be noted and remedied promptly. Identify and repair the source of leaking water in such locations as cracks, joints, and floor openings. Weekly re-secure, as necessary, electrical conduit and electrical fixtures for proper mounting. Cleaning and repainting of metal items or replacement and repair to reduce leaking should be performed as needed.

Frequency: Weekly

Procedure: Visually inspect conduits and panel boxes

Supplies: Tool kit, ladder, waterproof sealant, and rags

7.04. ELEVATORS (FOR PARKING STRUCTURE #3)

1) **Check elevators for proper operation.**

Frequency: Daily

Procedure: Visually inspect conduits and panel boxes

Supplies: Tool kit

2) **Perform annual inspection of elevators.** Preventative maintenance and good housekeeping is essential for proper operation of elevators and associated equipment. Additionally, most elevator codes and local building codes require periodic safety and maintenance inspections. Since requirements vary with the type of equipment, we recommend that the University verify local requirements and review the service contract provided with the equipment installation. Specific maintenance requirements for each piece of equipment are described in the operation and warranty manuals provided by the equipment supplier. Copies of these should be kept with this manual for ease of reference.

Frequency: Every 12 months

Procedure: Contact installer & have annual inspection performed

Supplies: None

7.05. HVAC

HVAC systems in the cashier booth (PS-1) should be inspected monthly. Air conditioner filters should be changed monthly.

Specific maintenance requirements for each piece of equipment are described in the operation and warranty manuals provided by the equipment supplier. Copies of these should be kept with this manual for ease of reference.

7.06. PAINTING

1) **Inspect painted surfaces for corrosion damage.** Maintenance of painting systems is necessary to preserve the facility appearance as well as protect the underlying metal from corrosion. Painted elements that are operations or safety related should be inspected monthly. Painted steel requiring maintenance and inspection includes hollow metal doors, mechanical lines, bollards, and miscellaneous metal.

   Frequency: Monthly

   Procedure: These surfaces should be inspected noting paint chipping and corrosion of the underlying metal. Rusting areas should be properly prepared by removing all rust down to bare, near white metal followed by priming and painting. As a minimum, miscellaneous metals requiring painting or touch-up should be painted using a two-coat alkyd enamel system. Application preparation should include removing all dirt, oil, grease and other foreign matter followed by a prime coat and two coats of alkyd enamel paint (i.e. Glid-Guard Silicone-Alkyd Enamel, by Glidden).

   Supplies: Paint, brushes, rollers, paint thinner (cleaner), rags, ladder, and wire brushes,

2) **Clean and restripe parking stalls.** In order to avoid confusion for parking facility users, restriping of parking stalls should be initiated when the existing stripes begin to fade and are difficult to see. What appear to be faded stripes may only be stripes covered with an accumulated film of dirt, oil and grease.

   Frequency: Every 12 months

   Procedure: Therefore, the maintenance staff should first wash down the striped areas using a mild detergent if necessary, prior to considering the repainting of stripes. This may be adequate to sufficiently brighten the existing stripes. When restriping is required," non-chlorinated rubber" paint should be used.

   When painting over existing stripes, the existing paint should be thoroughly cleaned and prepared by removing all de-bonded

paint prior to applying new paint. When changing the striping layout, the existing stripes should be completely removed. Painting over the existing stripes with gray paint is not recommended because as the gray paint begins to fade the old strips will become visible and create confusion.

Supplies: Paint (as listed below), brushes, rollers, paint thinner (cleaner), rags, ladder, and wire brushes,

1. "Latex Traffic Paint," Glidden, Cleveland, OH.
a. No. 22685 Yellow
b. No. 22683 White
c. No. 20090 Blue

2. "Setfast Acrylic Latex Traffic Paint," Baltimore Paint and Chemical Co., Division of the Sherwin-Williams Company, Baltimore, MD.
a. No. TM225 Yellow
b. No. TM226 White
c. No.TM2133 Blue

7.07. PARKING CONTROL EQUIPMENT

To ensure proper function and minimize equipment down time, inspections and preventative maintenance should be performed on a regular basis. The parking control equipment consists of control software, loop detectors, card readers, mechanical gates, and revenue control equipment. The particulars of the parking control equipment are in the operations manual and maintenance manuals provided by the manufacturer. These operation manuals are provided and should be located near this manual for ease of reference. In addition to any specific recommendation provided by manufacturer, we recommend the following:

Procedure: The control software should be tested every 90 days.

The loop detectors should be tested every 90 days to verify that they are functioning properly.

The card reader optics should be cleaned once a month with a standard bar code cleaning card.

Each gate should be observed on a monthly basis to watch the motion of the gate arms. Any unusual motion should be noted and limit switches adjusted.

Any unusual noises should be noted and the parts lubricated with SAE #10 oil. Belts should be checked for tension and tightened to proper tension. In addition, each gate should have preventive maintenance performed by an authorized equipment supplier every 6 months.

The system computer should be kept dust free and away from excessive heat and cold.

Supplies: Tool kit, rags, oil,

7.08. PLUMBING SYSTEMS

1) **Clean and flush drainage system.** The plumbing system design consists of floor drains, drain risers, and a dry fire protection standpipe. Floor drains and piping should be inspected monthly to assure proper drainage and the rapid disposal of water. Remove sediment from the piping and flush the drain system thoroughly in conjunction with the semi-annual floor slab wash down. During the wash down procedures, it is recommended that temporary filters, such as burlap, be installed over the drains to minimize debris and sediment collection in the drainage system.

Frequency: Floor drains and piping – monthly

Floor slab wash down – every 6 months

Procedure: Floor drains and piping should be inspected monthly to assure proper drainage and the rapid disposal of water. Remove sediment from the piping and flush the drain system thoroughly in conjunction with the semi-annual floor slab wash down. During the wash down procedures, it is recommended that temporary filters, such as burlap, be installed over the drains to minimize debris and sediment collection in the drainage system.

All piping and fittings should be checked for damage, leaks or corrosion. Damaged components should be immediately repaired or replaced upon discovery. Appropriate action should be initiated to correct or minimize any leaking observed. All corrosion damage should be promptly repaired to arrest the process before a larger scale problem develops.

Floor drain grates should be replaced as required to minimize the risk of a pedestrian tripping hazard.

Supplies: Hoses, flashlights, bristle push brooms, and burlap bags

2) **Inspect and drain standpipe system.** The dry fire protection standpipe system should be maintained in a condition to function properly at all times. Pipes, sleeves, and pipe hangers must be kept free of corrosion.

Frequency: Monthly

Procedure: Pipes, sleeves, and pipe hangers must be kept free of corrosion. These surfaces should be inspected noting paint chipping and peeling. Areas should be properly prepared by removing loose paint followed by priming and painting. Application preparation should include removing all dirt, oil, grease and other foreign matter.

Supplies: Paint, brushes, rollers, paint thinner (cleaner), rags, ladder, and wire brushes,

7.09. WATERPROOFING

As indicated in Section 7.01, to maximize the service life of this structure, it is very important to minimize water penetrations into the structure. As a result, the waterproofing components require rigorous monitoring and maintenance. The waterproofing system design consists of traffic bearing membrane (over occupied spaces), penetrating surface sealer, control joint and cove sealants, and expansion joints. These components have a limited life span and will require periodic repair, reapplication and total replacement at the end of their service life. Lack of periodic maintenance may lead to premature deterioration of the concrete and embedded reinforcing steel and will increase future repair and maintenance costs. Water leaking through damaged waterproofing components can also damage vehicle paint finishes, light fixtures and electrical distribution systems, and in general be a nuisance to facility users and maintenance staff.

1) **Inspect traffic-bearing membrane (deck coating).** The primary function of this membrane is to prevent water leakage through the concrete in these areas.

Frequency: Monthly

Procedure: Monthly inspection of the traffic bearing membrane should be performed, noting cracks, tears, blistering, debonding, and worn or deteriorated areas. Isolated failures may lead to localized water leaking, increased chloride contamination, and a potential increase in subsequent corrosion induced concrete deterioration. Membrane failures associated with or leading to concrete deterioration should be repaired only after any concrete deterioration or corrosion damage is addressed and repaired. Membrane damage from wear, vandalism, or accidents will generally require only proper recoating. Recoating or reapplication must be performed only by a licensed applicator and the Manufacturer's recommendations for repairs or reapplication must be followed. The traffic bearing waterproofing membrane system is warranted for five years. Damage from vandalism or lack of maintenance will generally not be covered under the warranty. Therefore, it is important to maintain the scheduled cleaning and maintenance program noted in Section 7.01.

It is recommended that all repairs be fully documented and recorded in a maintenance log.

Supplies: None required

2) **Test penetrating sealer for effectiveness.** The penetrating sealer has a limited effective life due to traffic wear, sun exposure, and internal concrete reactions. Generally, the sealer manufacturers recommend reapplication of the sealer every 3 to 7 years, however, we recommend sealer effectiveness testing prior to reapplication to minimize total long-term cost (may be possible to delay reapplication).

Frequency: 3 to 7 years

Procedure: To test for the effectiveness of the penetrating sealer the manufacturer of a testing laboratory should perform the test. If the sealer has lost its effectiveness, a waterproofing contractor should complete another application.

Supplies: None required

3) **Inspect and repair joint sealants.** Sealants have been installed at concrete construction joints, and horizontal/vertical concrete interfaces (coves).

Frequency: Monthly and every 6 months during wash downs

Procedure: Monthly inspections of the sealants should be performed to visually determine where and if any sealants have failed. Failed/damaged sealants should be repaired and checked with the deck wash down for leaks. If failed sealants are not repaired, then potentially expensive restoration may be required to preserve structural safety. Thus, if leaking is observed, the source of leaking should be identified and resealed as soon as possible. The contractor must replace all failed joints for a period of five years.

Supplies: None required

3) **Inspect and repair expansion joints.** All expansion joint glands should be inspected monthly for signs of leaking. Failed joint systems and subsequent leaking will cause contamination to the adjacent concrete and underlying cast-in-place members as well as a continuous nuisance to the facility users. Check individual product warranties for limitations. Damage from vandalism or neglect will not be warranted and therefore it is important to adhere to the cleaning and maintenance schedule as described in Section 7.01.

Frequency: Monthly and every 6 months during wash downs

Procedure: Monthly inspections of the expansion joints should be performed to visually determine where and if any expansion joints have failed. Failed/damaged expansion joints should be repaired and checked with the deck wash down for leaks. If failed expansion joints are not repaired,

then potentially expensive restoration may be required to preserve structural safety. Thus, if leaking is observed, the source of leaking should be identified and resealed as soon as possible. The contractor must replace all failed joints for a period of five years.

Supplies: None required

7.10. SAFETY CHECKS

Safety checks include assuring the proper operation of the lighting and illuminated pedestrian exit signs.

1) **Inspect walkways, handrails, stairwells, and walking surfaces for hazards.**
Pedestrian walk paths must be maintained to avoid trip hazards such as loose stair nosings, damaged expansion joints, deteriorated concrete surfaces, or debris. Handrails should also be checked to verify rigidity and ability to withstand handrail loading.

Refer to the NPA Maintenance Manual for a discussion on safety checks.

Frequency: Daily

Procedure: Pedestrian walk paths must be maintained to avoid trip hazards such as loose stair nosings, damaged expansion joints, deteriorated concrete surfaces, or debris. Handrails should also be checked to verify rigidity and ability to withstand handrail loading. The loose fittings should be tightened or repaired as necessary. Damaged expansion joints or deteriorated concrete surfaces should be repaired according to the procedures recommended in this section.

Supplies: Tool kit

7.11. SECURITY SYSTEM

Security adds to the overall user perception of security in a structure and represents an additional liability for the owner if they are not functioning properly. Thus, it is critical that these systems are maintained and monitored during all hours of operation. If this cannot be done, it is our opinion that these systems should be removed from the structure.

The security systems in this structure include:

- Push for assistance intercoms (all structures).
- Security cameras (PS-6)
- Monitors and VCR's located in the security office (PS-6).

By having these systems the user assumes that the systems are operational and that there is someone monitoring their actions 24 hours a day. As a result we recommend that the systems be checked daily as part of a walk-through inspection, but no less often than weekly, to determine if

the systems are functioning properly. Equipment should be maintained as described in the literature provided with the equipment.

Frequency: Daily

Procedure: The camera-housing lens should be cleaned off at least once a month to ensure a clear view.

The monitors and other camera control equipment should be kept as dust free as possible.

Each VCR should be sent in once a year for a complete reconditioning.

The tapes used in the VCR's should be rotated daily. New tapes should be purchased quarterly and the old tapes thrown away.

Supplies: Tool kit

7.12. SIGNS (GRAPHICS)

The signs should be reviewed weekly for damage from corrosion or vandalism. Replacement, if necessary, should be performed immediately to avoid possible traffic flow problems. Also, signs placed on the top levels of the facilities (or in other areas facing the sun) should be inspected for sun damage annually.

Frequency: Weekly

Procedure: Signs should be washed periodically with a mild detergent to maintain appearance and visibility of the signs

Supplies: Tool kit, mild detergent, water, rags, ladder, and hoses

7.13. STRUCTURAL SYSTEMS

Maintenance of the structural system is one of the most important goals of this maintenance manual. Monthly inspections of the slab system and annual inspection of the beams, columns, walls, etc., are important in order to locate, monitor and record cracking and water leakage observed and allow for immediate repairs that will reduce further deterioration. Maintaining the waterproofing system, including sealants, coatings, expansion joints, etc. (See Section 4.10) is crucial for reducing deterioration of the structural system.

1) **Perform inspections of slabs, beams, columns, and walls and make necessary repairs.**

Frequency: Monthly – slabs

Every 12 months – beams, columns, and walls

Procedure: Inspect slabs, beams, columns, and walls for cracks, spalls and water leakage. Repair deterioration after review and recommendation by qualified concrete restoration engineer.

If, for any reason, concrete repairs are to be made, **PRESTRESSING TENDONS ARE UNDER HIGH TENSILE STRESSES AND MAY RELEASE WITH EXPLOSIVE FORCE DURING CONCRETE REMOVAL.**

Supplies: Tool kit, flashlights, and ladder

NO drilling or installation of powder driven fasteners in beams or tees should be allowed prior to confirming that this operation will not damage the prestressing tendons or components.

7.14. STAIR AND ELEVATOR ENCLOSURES

The stair enclosures include steel framed stairs and glass curtain wall systems. Semi-annual cleaning of exterior frames and glazing should be performed as needed.

1) **Clean outside of stair and elevator enclosures and inspect for leakage.**

Frequency: Every 6 months

Procedure: Most dirt may be removed with a moderate pressure water rinse and a brush or sponge. A mild detergent may be added to aid in cleaning the frames. Thoroughly rinse after using any detergent. The handrails are painted steel. Refer to Section 7.06 for recommended maintenance of painted surfaces.

Leakage observed at caulked or gasketed glazing joints or at flashing joints should be repaired immediately. Broken panels should be replaced as soon as possible to maintain a safe passageway and minimize potential water damage to the structure or equipment.

Supplies: Tool kit, ladders, mild detergent, sponges, rags, buckets, and hoses

7.15. MASONRY

Masonry is a durable construction material that, if properly designed and installed, requires little maintenance. Maintenance that may be required includes cleaning, tuckpointing or preventive measures such as sealing the masonry and/or joints.

1) **Clean masonry and inspect masonry for signs of distress and clean.** Masonry should be inspected every six months for signs of distress such as bowing masonry, corrosion stains through mortar joints, failure of sealants, spalled or cracked masonry or excessive efflorescence. If these conditions are observed, the consultation of a masonry design professional is recommended.

Frequency: Every 6 months

Procedure: ***Cleaning***

Cleaning of stains on masonry is only necessary to maintain its original color and beauty. Stains may be due to paint, efflorescence, dirt, smoke, mildew, graffiti, etc. The most common cleaning solutions for masonry are the following :

- Proprietary Cleaning solutions - such as "SureKlean" by Prosoco, Inc., Kansas City, KS (913)281-2700 or masonry cleaning products by Diedrich Technologies, Inc., Milwaukee, WI (414)764-0058.
- Detergent Solutions - suggested solution of ½ cup trisodium phosphate and ½ cup laundry detergent in one gallon of clean water.
- Acid Solutions - suggested solution of 10% muriatic acid (9 parts clean water to 1 part acid).

Most masonry stains should be removed with either proprietary cleaning solutions or detergent solutions. These cleaners should be used in strict compliance with manufacturers instructions. Acid solutions are not recommended and should only be used for extremely tough stains and on old stained masonry. Acid washing should only be used with a maximum 10% of acid, as overuse of acid will weaken the mortar and discolor masonry units. Acid should never be used on limestone, marble, calcareous sandstone, glazed brick, architectural terra-cotta, polished granite, light colored brick or dark brown or black brick. Caution must be used with acid and proprietary cleaners to prevent damage to adjacent elements, plantings, and injury to personnel.

Methods used for cleaning masonry include bucket and brush hand cleaning and pressurized water (maximum of 700 psi). Sandblasting is not recommended for cleaning any type of masonry as the risk of damaging mortar joints and scarring brick surfaces is too great. When cleaning masonry it is very important to saturate the masonry surface with clean water before and after cleaning. This prevents the cleaning agent from being absorbed into the masonry thus keeping it at the surface where the cleaning is necessary. With all cleaning methods a small trial should be completed to determine the affect on the masonry, i.e. effectiveness, color change etc.

EFFLORESCENCE - One of the most common stains on masonry in new construction is efflorescence. Efflorescence is typically white in color and is a deposit of water-soluble salts on the surface of masonry. Water-soluble salts are brought to the surface of masonry in solutions of water and deposited there by evaporation. The salts come from soluble salts in masonry units, in mortar or from penetration by rain or groundwater.

Efflorescence is not at all detrimental to masonry, but only affects the aesthetics of the masonry. Moisture is the vehicle that brings the salts to the surface. In new masonry walls the moisture typically comes from water trapped in the brick materials and in the wall system from original construction. New buildings typically "bloom" with efflorescence for the first one or two years. If efflorescence continues beyond two years there is a source of moisture that needs to be identified and eliminated. This source of moisture may be through masonry joints, sealant joints, flashings etc.

Efflorescence is a relatively easily stain to remove. Over time rainwater will wash the efflorescence off the wall. Methods of removal include dry brushing or brushing with a stiff brush and clear water. Efflorescence stains that are more difficult can be removed with the use of a detergent solutions or proprietary cleaners as previously described. Efflorescence removal using wet methods should only be completed in warm dry weather since the added moisture will tend to bring more salts out of the wall.

Supplies: Tool kit, ladders, sponges, rags, buckets, cleaning, detergent, or acid solutions, and hoses

2) **Inspect and repair deteriorated tuckpointing.** The water penetration of masonry walls is most dependent on the condition of the mortar joints. Over time mortar will degrade due to atmospheric exposure. When mortar can be easily removed with a finger or with light pressure with a car key, tuckpointing of the mortar joints should be completed to maintain a water-resistant wall. Excessive water penetration over time will lead to deterioration of the masonry units and corrosion of embedded metal materials.

Frequency: Every 6 months

Procedure: Inspect the mortar joints in the masonry and test the mortar for soundness with a small screwdriver. When soft areas are located, they should be visibly marked. The areas should be repaired by a masonry contractor.

Tuckpointing involves removal of deteriorated mortar to a minimum depth of ½". Repair mortar should match the color and strength of the existing mortar. With soft masonry materials such as soft brick, limestone etc. using a soft tuckpointing mortar is essential. Type N mortar is most commonly used in tuckpointing of masonry walls.

Supplies: Tool kit, keel or marking pens, and ladders

3) **Preventive Maintenance**

It is important to maintain joint sealants at construction joints and perimeters of masonry walls. Water penetration at these locations can lead to the deterioration of masonry

materials, increased efflorescence, and the corrosion of steel support angles, masonry ties and supports.

Often it is recommended that masonry walls be sealed with a proprietary silicone, silane or siloxane type sealer to reduce water penetration. However, the sealing of masonry walls should not be completed without the consultation of a masonry professional as sealing masonry can at times cause more harm than good. For example, applying certain sealers to brick masonry that has efflorescence due to trapped moisture can result in the spalling of the face of the brick units. Crystallization of the salt deposited behind the sealer will result in spalling of the surface of the masonry. There is also a potential for moisture being trapped behind the sealer resulting in freeze/thaw damage to masonry units and mortar.

Numerous proprietary products are available for sealing masonry walls. Two suggested masonry sealers are “Hydrozo Clear Double 7" - water based by Degussa Corporation (Chemrex) (952) 496-6000 and “Aqua-Trete” by Huls America, Inc., (800) 828-0919. A trial area should be complete to determine if the sealer changes the color and appearance of the masonry.

4) **Remove graffiti from concrete and masonry surfaces.** Graffiti results from the application of paint, felt tipped marker, crayons, lipstick or other materials. Graffiti should be removed as soon as possible after it is observed.

Frequency: When needed

Procedure: Inspect area where graffiti is observed. If it is on a painted surface, consider mechanical removal, such as sand blasting or grinding and repainting. If it is on a masonry surface the cleaning method may depend on the type of graffiti medium used. Sand blasting, water blasting, and chemical cleaning are available. Sand and water blasting may damage the masonry surface, while chemical cleaners pose environmental problems and may not be effective. Presently there are over 500 products listed that purportedly prevent, discourage, or remove graffiti.

Blasting with baking soda and blasting with dry ice have been found to be effective and pose minimum damage to masonry and the environment.

It may take several attempts with different materials before the graffiti is removed from masonry. Local firms specializing in graffiti removal should be retained for removal.

Supplies: None required.

7.16. RECOMMENDED MAINTENANCE SCHEDULE

This section provides a recommended schedule of cleaning, inspection, and other maintenance activities. In general, the need for repairs will be determined during the inspection or maintenance phase. The following symbols are used to designate scheduled activity:

H Housekeeping - Housekeeping represents that work conducted by in-house staff consisting of basic cleaning, sweeping, wash downs, etc.

I Inspection - Inspections may be performed by properly instructed in-house staff. Periodic inspections are necessary to confirm proper operation of systems or components.

M Maintenance - Maintenance is usually performed by in-house staff, however, it may occasionally require an outside contractor. Maintenance represents tasks necessary to ensure proper operation of systems and components.

The recommended maintenance record form should be utilized by Parking Services maintenance staff or their designee to record periodic inspections, maintenance and repair.

All repairs should be performed on an "as needed" basis.