Operations Control Centers

Abstract: This standard provides guidance for the development and operation of rail transit agency operations control centers.

Keywords: central control, controller, dispatcher, operations control center (OCC)

Summary: The OCC serves as a command and control facility usually associated with rail fixed guideway systems. The OCC serves as the main location from which all aspects of the system are controlled and operational decisions are made regarding normal and non-normal operations. The facility also serves as the primary, but not necessarily exclusive, point of coordination for all operational decisions affecting rail service. This coordination usually includes both internal disciplines as well as external elements involving emergency response agencies.

Foreword

The American Public Transportation Association is a standards development organization in North America. The process of developing standards is managed by the APTA Standards Program's Standards Development Oversight Council (SDOC). These activities are carried out through several standards policy and planning committees that have been established to address specific transportation modes, safety and security requirements, interoperability, and other topics.

APTA used a consensus-based process to develop this document and its continued maintenance, which is detailed in the manual for the APTA Standards Program. This document was drafted in accordance with the approval criteria and editorial policy as described. Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

This document was prepared by the Operating Practices Working Group as directed by the Rail Standards Policy and Planning Committee.

This document represents a common viewpoint of those parties concerned with its provisions, namely transit operating/planning agencies, manufacturers, consultants, engineers and general interest groups. APTA standards are mandatory to the extent incorporated by an applicable statute or regulation. In some cases, federal and/or state regulations govern portions of a transit system's operations. In cases where there is a conflict or contradiction between an applicable law or regulation and this document, consult with a legal adviser to determine which document takes precedence.

This document supersedes APTA RT-OP-S-005-03, Rev. 3, which has been revised. Below is a summary of changes from the previous document version:

- Reformatted to align with the new APTA rail transit standards.
- Committee membership updated.
- Some global changes to section headings and numbering resulted when sections dealing with references and acronyms were moved to the end of the document.
- Changed references from "rail transit system (RTS)" to "rail transit agency."
- Old section 5 (new section 2) title changed from "Operations Control Center" to "Operational authority."
- Added a new Section 3.1 "Recruitment of qualified individuals."
- Old Section 7.1 titled "Medical-physical/psychological" discussed the requirement for control center staff to meet all standard agency requirements for physical fitness. This section was deleted and a new statement added to say that the rail transit agency shall determine requirements for fitness for duty for OCC personnel.
- Added a new Section 11, "OCC access and monitoring."
- Old sections 9.1, 9.2 and 9.3 with reference to "Normal operations," "Non-normal operations" and "Emergency operations" moved to the Appendix A under new sections A.8.1, A.8.2 and A.8.3.
- Old section A.3 "Operations control center – functional elements" has been modified and is now Section A.4, "Staffing." It shows typical position categories with a brief description of each job function.

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Introduction

This introduction is not part of APTA RT-OP-S-005-03, "Operations Control Centers."

APTA recommends the use of this document by:

- individuals or organizations that operate rail transit systems;
- individuals or organizations that contract with others for the operation of rail transit systems; and
- individuals or organizations that influence how rail transit systems are operated (including but not limited to consultants, designers and contractors).

Scope and purpose

This document addresses the operating standards and practice requirements in two general categories. Primary elements involve the general design/function requirements of an OCC and establishing the overall level of authority that is essential in an OCC facility in relation to the total system operation. This includes functional requirements of personnel within the facility and their applicable roles relating to field operations. This document also includes operating practices associated with rail transit operation control and management.

Note on alternate practices

Individual rail transit systems may modify the practices in this standard to accommodate their specific equipment and mode of operation. APTA recognizes that some rail transit systems may have unique operating environments that make strict compliance with every provision of this standard impossible. As a result, certain rail transit systems may need to implement the standards and practices herein in ways that are more or less restrictive than this document prescribes. A rail transit system may develop alternates to APTA standards so long as the alternates are based on a safe operating history and are described and documented in the system's safety program plan (or another document that is referenced in the system safety program plan).

Documentation of alternate practices shall:

- identify the specific APTA rail transit safety standard requirements that cannot be met;
- state why each of these requirements cannot be met;
- describe the alternate methods used; and
- describe and substantiate how the alternate methods do not compromise safety and provide a level of safety equivalent to the practices in the APTA safety standard (operating histories or hazard analysis findings may be used to substantiate this claim).

Operations Control Centers

1. General requirements

The functional aspects of the operations control center (OCC) vary greatly among rail transit agencies due to mode differences (e.g., streetcar, light rail, or heavy rail rapid transit), system size, level of technology associated with the operation, and system-specific functional requirements.

The rail transit agency shall establish OCC hours of operation based on the rail transit agency's operating and maintenance requirements. Most systems require the OCC to be operational 24/7 even though their actual revenue service hours may be less. This would enable major maintenance activities that can best be controlled from the OCC to be performed during nonrevenue hours.

Some rail transit agencies have developed integrated OCCs where multiple modes of transportation and liaisons from other functions—such as safety, security, first responders or infrastructure maintenance—are housed in a single location or a single room to enable a unified communications approach. The concept of the integrated OCC is to centralize decision-making for the different functions into a shared location for a more coordinated management of the transportation network.

The rail transit agency shall consider the setup of an integrated OCC so as to facilitate communication and shall ensure that the design meets communication needs, taking into consideration noise levels and means of communication among staff.

2. Operational authority

The operational authority of the OCC shall be clearly defined in applicable rail transit agency documents. These documents may include the rulebook, standard and emergency operating procedures, OCC manuals, special orders, bulletins, notices, or other documents as defined by the rail transit agency. The rail transit agency shall designate that control center personnel, usually controllers or dispatchers, are the responsible individuals having authority for mainline train movement. Decisions affecting such movements may be made in conjunction with designated field personnel. Additionally, OCC staff may also exercise authority over any remotely monitored and controlled support systems, such as ventilation systems, water pumps and valves, emergency telephone systems, etc.

The OCC shall have the primary authority for managing train movement and roadway worker protection activities, among other authorized activities at the rail transit agency in accordance with the aforementioned documents.

See APTA RT-OP-S-004-03, "Work Zone Safety Practices," and APTA RT-OP-S-016-11, "Roadway Worker Protection Program Requirements," for additional guidance concerning OCC engagement in roadway worker protection.

This is effective for overall system safety, as it establishes the primary focus to control system operations in a manner that allows this functional authority to be rigidly controlled and not allow unpermitted field intervention in the decision-making process, which might compromise safety.

3. Selection and training of personnel

Selection and training of personnel assigned to the OCC varies greatly and depends largely upon the functional responsibility the individual is assigned to and their level of authority over field operational elements. Since the authority and responsibility of the positions vary greatly, from having full authority for field operations and personnel to power control to responsibility for other rail service elements (e.g., passenger communications), so does the level of effort applied to selection and training within specific categories of employment or assignment. Guidelines for selection of personnel are provided in Appendix A. See APTA RT-OP-S-013-03, "Training of Rail Operating Employees," for additional guidance on development, structuring and administration of operations training programs.

3.1 Recruitment of qualified individuals

The rail transit agency shall establish a program or process for the recruitment of qualified individuals being considered for hire in the OCC. Factors to consider may include the following:

- experience in rail operations or in a control center environment
- ability to multitask and prioritize complex tasks
- strong decision-making ability
- ability to thrive in a stressful, fast-paced environment
- respect for the specialized nature of the work
- compensation and employee retention strategies
- strong technical, verbal and written communications skills
- familiarity and understanding of use of computer-based technologies
- communication and coordination skills
- regulatory knowledge
- collaborative and analytical skills
- supervisory experience
- strong organizational skills

See Appendix A, sections A.3 and A.4, for more considerations related to OCC staffing and qualifications.

3.2 Training of personnel

The core elements of any training program shall require full exposure to applicable rules, regulations, procedures and line-specific physical characteristics. This is best achieved through classroom orientations/ lectures, field experience and simulated scenarios complemented by on-the-job training (OJT). As trainees begin to become more familiar with the duties and responsibilities of the position, they can be provided with increasingly more freedom to perform required functions under the direction of a trainer or designated employee. The rail transit agency shall require the trainee to satisfactorily demonstrate each critical task to the trainer or designated employee.

The rail transit agency shall formally document all training program requirements and materials. Each trainee shall be provided a complete copy of the training materials in either hard copy or an electronic version for reference. The rail transit agency shall maintain formal records of OJT performance, evaluation/ documentation, testing and student progression. All training material and records shall be available for review by both internal and external oversight agencies.

The rail transit agency shall consider inclusion of scenario-based training to help evaluate the potential success of candidates in handling work in a high-stress environment. The rail transit agency shall consider how to administer such training to ensure that it is interactive and appropriately measured.

The rail transit agency shall consider providing hands-on training and familiarization early on in the training process to assess candidates' abilities and interest as they relate to the real-world duties of the controller.

The rail transit agency shall consider varying scenarios and tabletop assessments based on the different shifts and field conditions.

The training program shall, at a minimum, include the following elements:

- A course syllabus outlining the total requirements of the training program, inclusive of facility and physical characteristics familiarization, classroom training, testing requirements and on-the-job training.
- Introduction to the philosophy, goals and objectives of the OCC facility.
- Field training or review to ensure working knowledge of the functional elements of the rail transit agency, such as train operations, station operations, yard/tower operations, line supervision, police/security requirements, wayside facilities, etc., including but not limited to the following:
  - workstation operations
  - standard operating procedures (SOPs) and administrative orders
  - control and support facilities, such as power distribution, train control, communication, SCADA systems, etc.
  - safety-related practices and functions, inclusive of the agency emergency plan
  - operating strategies
  - radio protocol and phraseology
  - incident management
  - headway adherence
  - restoration of service techniques
  - standardized on-the-job training plan for each critical function, with associated evaluations and documentation, within the control center facility
  - roadway worker protection and track access
  - in-person field familiarization

The rail transit agency shall identify the parameters confirming satisfactory completion of all required training that results in formal certification or qualification. Certification or qualification may include an evaluation of communication practices/styles with senior management and may include a written comprehension exam and practical examination, as well as a qualifications checklist based on the rail transit agency's minimum qualifications for successful controller performance to be retained in the employee's individual training file.

3.3 Recertification/requalification of personnel

Given the dynamic nature of operating rail transit agencies, where methods and procedures change frequently, personnel assigned to the control center environment must receive retraining or recertification. The rail transit agency shall determine and document the required frequency of recertification/requalification of safety-sensitive personnel, not to exceed a two-year minimum.

The rail transit agency shall determine the methods and approach of its evaluation activities. The purpose and intent of recertification/requalification is to ensure that OCC personnel are current with regard to newly developed standards, procedures and rules as they apply to the operating system.

Further, as requirements and standards are implemented or modified for the OCC, it is essential to determine the extent to which assigned personnel are conversant with such changes. The recertification/requalification shall include, but not be limited to, presentation material and comprehension exams. When recertification/requalification is achieved, the rail transit agency shall include appropriate documentation in the employee's personnel record or training file.

The rail transit agency shall establish requalification/recertification requirements for employees who have taken a leave of absence. The rail transit agency shall determine thresholds for different levels of training depending on the time away from job duties and other factors as required by the rail transit agency.

3.4 Qualification/certification assurance

The rail transit agency shall ensure that recertification/requalification activities are scheduled in a manner to ensure that controllers are not at risk of losing their certification/qualification. The rail transit agency shall ensure that requalification/recertification dates are scheduled in such a manner that recertification/requalification of individuals will not pose an undue burden on OCC operations.

3.5 Responsibility to maintain certification/qualification

The rail transit agency shall ensure that all controllers maintain certification/qualification in accordance with prescribed timelines and that approved processes are available to extend certification/qualification on a case-by-case basis. The rail transit agency should establish scheduled completion dates for any extensions granted. The circumstances of any extension should be documented. The rail transit agency shall consider any regulatory requirements for notification of deviation from established protocols.

3.6 Specialized/familiarization training

The rail transit agency shall define and incorporate appropriate specialized/familiarization training into its OCC training curriculum. This category of training is usually provided to expose control center personnel to essential elements that enhance their job-related skills. Such training may be provided off-site or in a classroom seminar environment. Training may be associated with rail operations; management principles; physical characteristics; and/or new system technology, such as computer hardware or software. The intent is to provide the employee with the selected training module in an atmosphere that allows concentration and focus without normal control center distractions. The rail transit agency shall ensure that additional training does not diminish the completion of the core training.

3.7 Scenario-specific training and tabletop exercises

The rail transit agency shall develop training and/or tabletop exercises that incorporate the use of scenarios that replicate real-world situations and to the procedures developed for the OCC. If the rail transit agency has an OCC simulator, it shall incorporate use of the simulator into the scenario-based training. However, rail transit agencies that do not have simulators may develop other activities in which individuals are tested on mock scenarios, possibly at a workstation. (See Appendix A, sections A.8.1, A.8.2 and A.8.3, for additional guidance.)

The rail transit agency shall establish protocols for how scenario-based training is administered and evaluated. The agency shall determine the types of scenarios used based on the operating conditions and environment of its own system. In doing so, the rail transit agency shall consider all different roles of the OCC that may be evaluated: general operations, station operations, security, power or other functions.

4. OCC radio and phone communication protocols

The rail transit agency shall establish guidelines and/or procedures establishing protocols for proper radio and telephone communications by OCC personnel. This may include the use of clear language, readbacks, professionalism, courtesy or other related methods of effective communication.

The rail transit agency shall establish guidelines and requirements governing the management of recorded data, including information such as chain of custody, access to information and record retention.

5. Use of playback and/or review of incidents

If the rail transit agency has playback capability, it shall consider the possible uses of playback material in the development and provision of lessons-learned training, recertification, requalification, incident review and general training programs. Playback may be video, SCADA indication, audio or all of the above.

The rail transit agency shall determine if playback can be utilized as part of its continuous improvement programs. The rail transit agency shall take into consideration employee privacy in any use of real-world information in a playback format for training or other learning exercises.

The rail transit agency shall establish procedures for handling of video data that may be held or controlled by parties other than rail operations.

6. Fitness for duty

The rail transit agency shall establish requirements specifying the rail transit agency's definition and requirements of OCC personnel fitness for duty.

APTA provides guidance for fitness for duty and fatigue management of rail transit personnel in APTA RT-OP-S-018-12, "Fitness for Duty (FFD) Program Requirements," and APTA RT-OP-S-023-17, "Fatigue Management Program Requirements."

6.1 FTA/USDOT drug and alcohol testing requirements

The rail transit agency shall ensure that personnel designated as "safety-sensitive" shall comply with all required alcohol and drug-testing requirements as mandated by the FTA/USDOT, other regulatory authorities, and also the supplemental policies of the rail transit agency.

7. Hours of service for OCC personnel

All safety-sensitive OCC positions may be subject to FTA, FRA, or state and other regulatory oversight requirements. Therefore, it is essential that all applicable requirements related to hours of service be reviewed. If none are found, the rail transit agency shall develop and adopt relevant standards that determine minimum time between work shifts and maximum on-duty assignment time.

The rail transit agency shall establish hours-of-service requirements for OCC personnel in accordance with the provisions identified in APTA RT-OP-S-015-09, "Train Operator Hours-of-Service Requirements." The rail transit agency shall also consider the provisions of APTA RT-OP-S-018-12, "Fitness for Duty (FFD) Program Requirements," in developing its hours-of-service requirements.

Consideration should be given to extraordinary conditions that may require the extension of work assignments beyond normally established limits. The OCC manager or designee shall, based on adverse operating, emergency conditions or situations beyond the control of the rail transit agency, be empowered to declare an emergency, suspending any or all hours-of-service standards. This action shall be clearly communicated to all

affected parties, describing the reasons for the declaration, job classes affected and the expected duration of the order. The rail transit agency shall establish a protocol for recording and retaining information related to any decisions to assign work that exceeds the hours-of-service limitations established by the rail transit agency. Return to normal operation shall occur as quickly as the situation allows.

8. Electronic device distraction policy

APTA provides guidance for personal electronic device distraction policies in APTA RT-OP-S-017-11, "Electronic Device Distraction Policy Requirements." The rail transit agency shall adapt the provisions of the policy for the unique operating environment of the OCC.

9. OCC procedures

The rail transit agency shall develop procedures to address normal, special and emergency operations, which may include, but not be limited to, the situations listed in Appendix A, Section A.8.

The rail transit agency shall establish and document the time frame for minimum review periods for OCC documentation. It shall periodically review and update, as appropriate, the OCC procedures per a timeline established by the rail transit agency.

The rail transit agency shall evaluate the changes required for procedures when upgrading OCC technologies and/or equipment. It shall ensure that management of change principles are applied to any changes affecting OCC operation and documentation.

The rail transit agency shall establish procedures for distribution of the SOPs and emergency operating procedures (EOPs). These procedures should include the requirement that recipients sign for all SOPs and EOPs.

The rail transit agency shall ensure that all current SOPs and EOPs are readily accessible and available for controllers and that controllers understand where to find and access these critical documents.

The rail transit agency shall ensure that version control methods are in place so that all current SOPs and EOPs are available and in use.

The rail transit agency shall identify usage protocols and authority for use of control systems, such as SCADA, whose information is conveyed to and used by the OCC.

10. Safely managing emergency situations

The rail transit agency shall identify the responsibilities and any required activities of controllers during emergency situations so that rail operations are safely managed. The rail transit agency shall establish that the controller's primary duty is to manage the situation, above other requests for assistance, such as providing information to parties not immediately responsible for emergency response to the rail operation or related rail emergencies. This shall include but not be limited to guidance for internal and external communications responsibilities and requests.

The rail transit agency shall establish any requirements associated with the opening of an emergency operations center (EOC) and its coordination with the OCC.

The rail transit agency shall identify how the OCC is incorporated into overall incident command structure (ICS) protocols established by the rail transit agency and emergency first responders.

11. OCC access and monitoring

For the purposes of safety and security, the rail transit agency shall develop a process for controlling and monitoring authorized access to the OCC.

The rail transit agency shall consider incorporating the use of audio or video recording devices within the OCC to provide recorded information on work practices not captured on recorded radio or phone lines.

The rail transit agency shall determine if additional restrictions or requirements must be established governing what individuals who access the rail transit agency may do with the information they obtain—for example, if an individual is permitted to photograph parts of the OCC, what restrictions may be in place on use of the photographs.

12. OCC design considerations

In the development, design and location of an OCC, the rail transit agency shall consider the following:

- public relations/social media desk
- maintenance functions desk (e.g., track/guideway, communications, power, vehicles)
- ergonomic considerations in functional design/human systems interface
- ambient noise levels and means of ensuring that ambient noise is minimized (e.g., use of headsets to control extraneous noise)
- backup OCC location
- emergency procedures and continuity of operations (primary and backup facilities) for the OCC
- dedicated and secure space for local and regional emergency responders
- use/integration of legacy and new equipment
- technical support personnel
- configuration and sustainability management (e.g., wires, workstations, software)
- support facilities, such as break rooms and rest facilities for OCC staff

When considering these criteria, the rail transit agency shall involve the input of rail operations personnel and subject matter experts.

13. Determination of adequate OCC staffing levels

In order to maintain safe management of rail transit operations, the rail transit agency shall ensure that minimum staffing levels are consistently maintained.

13.1 Staffing minimums and staffing priorities

OCC personnel are essential to the safe operation of rail transit. OCCs demand minimum staffing levels during all shifts in order to ensure the safe management of all aspects of rail operation, from train movement to systems monitoring and control to managing roadway work. Whereas some rail transit agency staffing levels may be subject to reduction at times, OCCs are unique in that they cannot function properly without key roles appropriately staffed during all shifts of the day. Appropriate staffing includes backup staff to backfill for the various reasons individuals may not be able to work, including but not limited to illness, time off, retirement or other possible causes of vacancy.

The rail transit agency shall designate OCC staff as essential and subject to minimum staffing levels that must be maintained, including with advance planning for knowledge of known, predicted, expected, and sudden attrition or loss of essential staff.

In planning for maintaining minimum staffing levels, rail transit agencies shall also take into consideration the length of time to recruit, hire, train and qualify or certify controllers who will have the extensive responsibilities associated with working in the OCC.

The rail transit agency shall identify processes or protocols for the retention or holdover of staff in cases of unexpected instances of a controller not being available for a shift. The rail transit agency shall ensure that all positions considered part of minimum staffing are staffed until a sufficient replacement can fill that position.

13.2 Factors affecting staffing levels

The rail transit agency shall evaluate all factors that affect the adequate level of staffing in the OCC to ensure safe, efficient and sustainable staffing levels that allow safe management of the system. At a minimum, factors to consider shall include the following:

- hours of service
- fitness for duty
- attrition
- staffing levels at which new employee hiring process commences
- minimum staffing requirements to run the OCC
- training and qualification periods
- system modifications/expansions
- procedural changes
- retraining and requalification periods
- sick, personal and vacation time
- special events
- continuity of operations
- contractual obligations

When establishing budgets, the rail transit agency should consider the evaluation of controller staffing levels, challenges and needs from the previous year to establish ongoing and future controller staffing headcounts.

13.3 OCC management qualification as controller

The rail transit agency shall determine if OCC management must retain controller qualification or certification so they may provide additional support. The rail transit agency shall establish situations wherein a manager is permitted to assume any controller duties, such as in an emergency situation or in situations where a controller becomes unexpectedly unavailable until a qualified or certified controller becomes available. The rail transit agency shall determine how any type of qualification or certification must be coordinated with possible represented parties.

14. Succession planning/employee development program

Each role within the OCC requires unique skill sets that are not easily or quickly attainable. The rail transit agency shall develop a formal succession planning and employee development program that takes into account the variable factors to ensure successful employee development and overall succession to positions of more authority and responsibility within the OCC. Succession planning and employee development may include the following:

- Ensuring that the hiring process takes into account the unique skills controllers must possess in order to operate rail transit safely.
- Creating clear pathways for job progress and succession coordination.
- Ensuring proper staffing levels, including management/supervision during each shift.

- Ensuring the creation and ongoing management of a good working atmosphere.
- Ensuring that staffing levels reflect all the needs of the rail transit operation, including operations, inspection, maintenance, longer-term capital projects, etc.
- Consideration of other sources of strong candidates, such as emergency response dispatch, other types of transportation dispatch, etc.
- Regularly ensuring understanding of and compliance with evolving radio communication expectations.

See APTA RT-OP-RP-029-021, "Rail Operations Employee Development Practices," for more information about employee development program practices.

15. Backup OCC

The rail transit agency shall consider establishing an independent backup OCC as a part of its Continuity of Operations Plan. The rail transit agency shall develop a threat and vulnerability assessment that identifies backup OCC needs. If a rail transit agency does not have the technology or ability to establish a backup OCC, it should develop procedures for the limited operation or maintenance of rail operations in the event of a primary OCC failure or shutdown.

If a rail transit agency has established a backup OCC, it shall identify a frequency of exercising the equipment and operation of the OCC to ensure functionality when the backup OCC will be needed on an unplanned basis. The rail transit agency shall establish a written plan governing the activation of the backup OCC and conducting rail control from the backup OCC.

The rail transit agency shall consider the location of the backup OCC so it would not be affected by an event at the primary OCC but that controllers can travel to it in a timely manner.

The rail transit agency shall ensure that both OCCs are not reliant on the same source for utilities in case the source for the primary OCC becomes unavailable.

16. Internal communications

During normal and adverse operations, internal communication of rail operations status is important throughout the rail transit agency. The rail transit agency shall establish internal communication protocols for information it deems critical reported out from the OCC so that necessary information is communicated out while controllers can still primarily focus on safe train operation control.

17. Public communications

The rail transit agency shall establish external communications protocols for information it deems critical reported out from the OCC.

The rail transit agency shall establish protocols for the dissemination of information it provides to the public. This may include direct communications or sharing with other rail transit agency departments, such as public relations, social media or police.

18. Up-to-date OCC operating practices

The rail transit agency shall periodically review OCC needs and update the rules, procedures, practices, training, staffing levels and other core aspects of the OCC's safe operation in order to reflect the current environment.

Related APTA standards
APTA RT-OP-S-004-03, "Work Zone Safety Practices"
APTA RT-OP-S-016-11, "Roadway Worker Protection Program Requirements"
APTA RT-OP-S-013-03, "Training of Rail Operating Employees"
APTA RT-OP-S-015-09, "Train Operator Hours-of-Service Requirements"
APTA RT-OP-S-018-12, "Fitness for Duty (FFD) Program Requirements"
APTA RT-OP-S-017-11, "Electronic Device Distraction Policy Requirements"
APTA RT-OP-S-023-17, "Fatigue Management Program Requirements"
APTA RT-OP-RP-029-21, "Rail Operations Employee Development Practices"

References
American Public Transportation Association, "Moving People Safely," Third Edition, 1977.

Code of Federal Regulations:
   49 CFR Part 40, "Procedures for Transportation Workplace Drug and Alcohol Testing Programs,"
      October 2001. https://www.transportation.gov/odapc/part40
   49 CFR Part 653, "Prevention of Prohibited Drug Use in Transit Operations," October 2000.
      https://www.govinfo.gov/content/pkg/CFR-1997-title49-vol5/pdf/CFR-1997-title49-vol5-part653.pdf
   49 CFR Part 654, Prevention of Alcohol Misuse in Transit Operations, October 2000.
      https://www.govinfo.gov/content/pkg/CFR-2000-title49-vol5/pdf/CFR-2000-title49-vol5-part654.pdf
   49 CFR Part 655, Prevention of Alcohol Misuse and Prohibited Drug Use in Transit Operations, October
      2001. https://www.ecfr.gov/current/title-49/subtitle-B/chapter-VI/part-655

Department of Transportation "Partnering for Safety: Managing Fatigue," March 1999.

Definitions
For the purposes of this standard, the following terms and definitions apply. The job titles listed below are used in this standard for informational purposes only. It is up to the individual rail transit agency to determine and use titles as it finds appropriate.

familiarization training: Training used to familiarize employees with existing and/or new conditions, equipment, rules, procedures and other transit elements as a part of an introduction qualification phase.

hours of service: Rules or regulations intended to govern the number of hours an employee may work. Generally also incorporates mandatory rest periods.

on-the-job training (OJT): A form of training taking place in a normal workplace. It is a one-on-one training located at the jobsite, where someone who knows how to do a task shows another how to perform it. Also called *direct instruction*.

rail transit agency: The organization that operates rail transit service and related activities. Also called *transit agency*, *operating agency*, *operating authority*, *transit authority* or other similar terms.

recertification/requalification: Periodic training and testing given to employees currently qualified to ensure such employee maintains the required level of skill, knowledge and/or ability to carry out the full scope of duties and responsibilities of the classification.

SCADA: Supervisory Control and Data Acquisition system to connect various pieces of equipment in a geographic area.

standard operating procedure (SOP): Unique to rail agencies with reference to operating procedures.

Abbreviations and acronyms

ADA	Americans with Disabilities Act
APM	automated people mover
CCTV	closed-circuit television
CFR	Code of Federal Regulations
EOC	emergency operations center
EOP	emergency operating procedure
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
OCC	operations control center
OJT	on-the-job training
PTASP	public transportation agency safety plan
SCADA	Supervisory Control and Data Acquisition
SOP	standard operating procedure
USDOT	United States Department of Transportation

Document history

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Appendix A (informative): Additional information on OCCs

A.1 Overview

This informative appendix provides additional information that the rail transit agency should consider in utilizing this standard for developing operating rules pertaining to operations control centers.

A.2 General design/functional requirements

Some smaller rail transit agencies apply a minimal level of functionality and application of technology. This minimal functionality takes the form of assigned OCC personnel (train controllers) who maintain radio communication with field services (trains and other personnel). This application may or may not provide remote monitoring of train location status or control of field equipment, including signal indications and track switches.

Larger rail transit agencies usually provide the capability of monitoring the location of all trains on the system on a dynamic status basis. This status information may also include schedule adherence, all track switches, wayside signals, interlockings, intermediate track circuits and traction power distribution. Additional non-train operation elements may also be monitored and/or controlled. These elements usually include but are not limited to the following:

- Tunnel fan ventilation status.
- Fire control elements.
- Station facilities, including escalators, elevators and ancillary room intrusion alarms.
- CCTV monitoring and other security.
- Passenger information coordination, including but not limited to public address announcements, station electronic messaging and schedule information.
- Automatic fare collection status information.
- Bus dispatching/other modes. While not a universally accepted practice, certain multimodal agencies incorporate bus dispatching/monitoring in an expanded control center environment to include other modes, including bus operations, paratransit services, APMs, etc.
- Operations support functions, i.e., car equipment, wayside equipment, technical support, crew dispatching, etc.

Depending upon the application, the OCC may contain track and information display panels or desktop display elements. These elements are usually in conjunction with monitoring/operating control consoles/workstations where personnel can affect control, command or communication actions.

Because there is significant interface with computers and communication, the main OCC room may be augmented with an adjacent communications equipment room or other ancillary facilities. The associated room provides proximity for support elements that apply to the OCC facility. The main OCC room usually is an adjustable-light, accessible and ergonomically designed facility with sound absorption material in order to maintain the minimum noise levels. OCC facilities may also contain adjacent personnel quarters, e.g., conference/training/briefing room, lunch/break room, locker rooms, restroom facilities, etc. The location of OCC facilities will vary, but in most cases, it is a secure facility with controlled access, integrated into one of the agency's existing facilities (yard facility structures or main administrative office building) and in close proximity to the operating system.

A.3 Functional elements

The functional elements within the OCC depend on the size of the rail transit agency, the level of technology applied and the transit modes monitored within the facility. The functions and workstations may include the following:

- central control shift supervisor/manager workstation/work area
- train controller workstation/work area
- train operation/monitoring/display panels
- traction power distribution and monitoring
- passenger/customer services/communications
- communication systems
- police services/security
- CCTV
- wayside/facilities maintenance
- rail vehicle maintenance
- clerical support
- bus operations (if collocated)

A.4 OCC staffing

The actual number of personnel assigned to the OCC is largely a function of the size of the rail transit agency and the functional elements mentioned above. The number of personnel in each category, functions they perform, or whether the position exists at all is system specific and is also determined by system size, technology and other priorities. Depending on the level of technology applied and functional authority that rests within the OCC, the variety of position categories include but are not limited to the following:

- **OCC manager:** Sometimes called control center supervisor or chief officer. The position and function that assumes management responsibility for the efficiency and effectiveness of all personnel on the shift.
- **Train controllers or dispatchers:** Also known as system supervisors. The function that directs and coordinates the movement of trains as called for in the daily service schedule and implements delay mitigation and emergency strategies. Decisions affecting such movements may be made in conjunction with designated field personnel. Train controllers' tasks may include responsibility for bad order train management, processing of routes at switch networks, activation of emergency procedures, oversight of maintenance activities on the right-of-way, etc.
- **Traction power supervisor/power distribution director:** The function that operates controls and coordinates activities related to traction power and auxiliary power distribution systems.
- **Passenger/customer services representative/supervisor:** The function responsible for transmitting pertinent service-related information, including ADA elements, by telephone, radio and public address system and other mediums to the riding public and news service organizations.
- **Communication console operator:** The function responsible for coordinating all communication elements at a particular console or workstation. As the "voice" on the radio, this position usually works in coordination with the train controller.
- **Security/police services dispatcher:** The function responsible for handling 911 calls, dispatching police officers or security personnel as appropriate, providing telephone assistance and monitoring CCTV and other electronic alarm systems.
- **Fire department representative:** The function responsible for serving as on-site presence from local fire department(s).
- **CCTV observer:** The function responsible for monitoring CCTV and providing related passenger assistance.

- **Safety department representative:** The function responsible for serving as on-site presence from rail transit agency safety department.
- **Facilities supervisor/station manager:** The function responsible for managing the daily activities that occur at passenger stations or termini, such as providing customer service, ensuring that equipment (fare collection, elevators, escalators, video displays, etc.) is in proper working order, assisting with managing emergencies, etc.
- **Wayside/equipment maintenance supervisor:** The function that dispatches, manages and coordinates activities conducted by the maintenance department, within the right-of-way envelope, in support of routine maintenance or emergency maintenance response.
- **Rail vehicle maintenance supervisor:** The function responsible for directing field technical support personnel in troubleshooting and recovering of train equipment failures.
- **Clerical support:** Function that provides all OCC administrative support functions, such as computer data entry, typing, filing, etc.
- **Bus dispatcher or other intermodal coordinator:** The function responsible for managing the daily distribution of buses or other modes of transportation per the published timetable. This position is also responsible for delay emergency response and alternate rail service management.

A.5 On-call rail transit agency personnel

Identification of individuals considered to be on call for purposes of responding to rail operations needs is critical to ensuring efficient response to regular and irregular occurrences affecting rail transit operations. Rail transit agencies may identify on-call personnel and develop associated procedures for communication and collaboration with the OCC.

A.6 Selection of personnel

Selection of personnel varies widely based on position within the OCC and level of safety-critical responsibility. Some positions can be processed in conjunction with the agency's standard internal human resources policies related to the specific position. However, the greater the level of responsibility (train controllers/dispatchers, traction power console operators, etc.), the greater the degree of evaluation required.

The essential requirements for selection of personnel include the establishment of a policy related to internal hiring of experienced agency personnel or external hiring of individuals with a non-transit background. The preference is to hire internally based on an employee's substantial knowledge of system operational elements and standards and practices. However, some agencies have opted for external hiring and providing a more substantial level of training spread out over a greater length of time. The latter approach usually requires a thorough and extended familiarization and orientation training experience for the new hire to have an understanding of the unique interdisciplinary elements associated with the transit operating environment. Once this is achieved, training can more appropriately focus on control center operations and associated requirements.

These requirements should include an individual's ability to function in a confined environment, frequently with little or no external access or stimulation. Other characteristics include an adjustable-light environment and extended periods being in a seated position at a workstation or console. Other elements include specialized skills, including multitasking and abstract reasoning. Because of the specific nature of the OCC environment and its uniqueness, many agencies have adopted psychological testing to determine whether a potential candidate possesses any personal psychological characteristic that would manifest itself in such a way as to create adversity or conflict.

Selection of personnel varies depending on current human resources/hiring policy. The process may also include a battery of tests that assess an individual's general intelligence, computer skills, management or supervisory knowledge, and even more substantive tests that include personality profiles and abstract

reasoning. The latter tests are administered to determine individuals' ability to function in a control center environment and the extent to which they are intellectually capable of multitasking. Some agencies have patterned their selection of OCC personnel to that of the Federal Aviation Administration in the selection of air-traffic controllers.

A.7 Safety-sensitive category for designated personnel

The FTA has established requirements that classify individuals as safety-sensitive. These include personnel who are directly or indirectly involved in a decision-making role relative to the dispatch or movement of revenue service vehicles, who provide security and carry a firearm, or who are in a position of controlling field equipment and operations. Reference 49 CFR parts 653, 654, 655 and 40.

A.8 OCC standard operating procedures

In order for the OCC to exercise appropriate command and control over field operations, it is essential to incorporate a series of SOPs. These SOPs are used in conjunction with other applicable rules and regulations and provide OCC personnel with an agency-approved method of maintaining service levels and handling field occurrences (emergency and otherwise). These SOPs encompass a wide range of categories and generally provide a prescribed method of effectively and safely dealing with any occurrence on the system. The SOPs take into consideration passenger and employee safety; safeguards for rail transit agency facilities; and generally accepted "best practices" for dealing with occurrences involving operations, safety/security, incidents involving natural disasters and accidents, or other major incidents. The development of such SOPs usually involves personnel from appropriate disciplines within the system, as well as outside emergency or governmental agencies having jurisdiction or responsibility for response.

Examples of possible SOPs to consider are shown below but are not meant to be an exhaustive list.

A.8.1 Normal operations

1. Terminal station interlocking operation
2. Making station stops and platform berthing
3. Mixed/street traffic operations
4. Wheelchair boarding requirements/placement/securement
5. Bicycles onboard trains
6. Automatic train operation
7. Automatic and manual door operation
8. Ground inspection of in-service trains
9. Characteristics of automatic train protection
10. Station operations (fare gates, restrooms, agent booths, etc.)
11. Express train operations

A.8.2 Special operations

1. Track out of service
2. System failure/service recovery techniques
3. Communication failures
4. Special events service, including charter train operation
5. Medical occurrences:
    • Onboard trains/in stations
    • Sick or injured passengers or employees
    • Death or injury on the right-of-way
6. Establishing slow/work zones (protection of workers/contractors)
7. Adjacent construction

8. Reverse traffic operation
9. Manual block operation
10. Failure of train doors
11. Movement of a disabled train
12. Cutting out train brakes and/or propulsion
13. Civil unrest/protest demonstrations, onboard trains and in stations or other facilities
14. Establishing "bus bridge" and other supplemental service
15. Protection of on-track maintenance equipment, shunting and non-shunting
16. Broken crossing gates, operational requirements/restrictions
17. Loss of signal control, cab or wayside
18. Rotating power outages
19. Removal and restoration of traction power (nonemergency)
20. Intrusion into the right-of-way (vehicle, trespasser, other)
21. Preparation and use of a rescue train
22. Crowd control
23. Unruly passenger(s)
24. Environmental situations impacting operations and infrastructure maintenance

A.8.3 Emergency operations

1. Earthquakes and/or volcanic eruption
2. Flood in trackway/subway stations/tunnels
3. Fires:
    - Wayside fires
    - Fire on a train
    - Fire on the right-of-way
    - Fire on an elevated structure
    - Fire in a tunnel
    - Fire in a station
4. Extreme weather:
    - Hurricanes
    - Tornadoes/high winds
    - Heat or cold
    - Ice or snow
5. Bomb threats
6. Bomb detonations
7. Total system shutdown and restoration
8. Partial system shutdown and restoration
9. Civil unrest
10. Police activity
11. Terrorist acts:
    - Use of intelligence
    - Hijacked equipment
    - Hostages/barricaded subject
    - Biochemical hazards (on trains/in stations)
    - Unauthorized person in control of train
    - Cybercriminal/terrorist computer system attacks
12. Hazardous materials spill (non-terrorist act)
13. Derailments

14. Passenger evacuations from trains:
    - In tunnels
    - On elevated structures
    - On open right-of-way
15. Passenger evacuations from stations
16. Overhead wire down
17. Removal and restoration of traction power (emergency)
18. Emergency reporting/notification list (agency/local/state/federal)
19. Train/pedestrian/trespasser/employee accidents
20. Contacting outside emergency response agencies (police, fire, paramedic, hazardous material, bomb squad, etc.)
21. Collisions, train-to-train and other
22. Unknown/false occupancy and/or broken rail
23. Track irregularities (rail kinks, misaligned track, etc.)
24. Activation/control of tunnel ventilation systems
25. Loss of station power
26. Continuity of operations
27. Loss of signals, switches and power
28. Police activity affecting rail operations but not related to examples listed above