Runway Status Lights
BOS Operational Evaluation Training for Vehicle Operators

By: Bruce Kinsler
FAA, AJP-671, 202-488-7513

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Outline

• Runway Status Lights (RWSL) Overview

• BOS RWSL Adaptation for Operational Evaluation

• RWSL Light Logic
  – Runway Entrance Lights (RELs)
  – Takeoff Hold Lights (THLs)
  – Runway Intersection Lights (RILs)

• RWSL Light Logic and Protocol for ATC and Vehicle Operators

• RWSL Maintenance Interface
Boston Runway Status Lights (RWSL) Overview

• **Runway Status Lights purpose**
  – Prevent runway accidents
  – Reduce frequency and severity of runway incursions

• *How do Runway Status Lights do this? By increasing vehicle operator situational awareness*
  – RELs provide a *visual indication* that it is unsafe to cross or enter a runway
  – THLs provide a *visual indication* that is unsafe to takeoff from a runway
  – RILs provide a *visual indication* that it is unsafe to enter a runway-runway intersection

• **RWSL at BOS consists of RELs, THLs and RILs**

![THLs](image1)

![RILs](image2)
RWSL Generic Operational Concept

RWSL safety logic uses fused surveillance to automatically illuminate lights - directly warning users that a runway is unsafe.

RELs: Runway Entrance Lights
THLs: Takeoff Hold Lights
RIls: Runway Intersection Lights
RWSL Adaptation at BOS

- **RELs (7) at selected intersections**
  - 4L/22R at E and K
  - 4R/22L at E (east)
  - 9/27 at C (north)
  - 15R/33L at D (west)

- **THLs (2) at full-length takeoff points on 9 and 15R**

- **RILs (2) on 9 at 15R/33L (west of intersection) and on 15R at 9/27 (north of intersection)**

*THLs and RILs on runway 9 share 18 fixtures*
Runway Entrance Lights (RELs)

RELs are **RED** when it is unsafe to enter the runway

- RELs along taxiway centerline for last-second situational awareness
- Distinct from Surface Movement Guidance and Control System (SMGCS) stop bar
Protocol for Vehicle Operators Viewing Red RELs

• If RELs illuminate RED, the runway is unsafe to enter or cross and the vehicle operator should stop immediately and contact ATC
  - ATC at their discretion may re-clear the vehicle to cross illuminated RELs

• When the lights are off, vehicle operators may not enter or cross the runway without ATC clearance, follow established hold short protocols, lights do not indicate clearance e.g. stop and go
  – In some instances (anticipated separation), RELs may be illuminated while the clearance is being given, but should be turned off by the time the controller has finished issuing the clearance

RELs indicate runway status only; they do not indicate clearance!

DO NOT CROSS RED LIGHTS without ATC clearance
Takeoff Hold Lights (THLs)

**THLs are red when it is unsafe to depart**

- BOS THL configuration is double-row/1,500 feet longitudinally along Runway 9 and 15R centerlines
Protocol for Vehicle Operators Viewing Red THLs

- If on the runway and THLs illuminate red:
  - Vehicle operators should not proceed through crossing runway intersection ahead
  - Vehicle operators may cross illuminated THLs with ATC clearance only

- THLs at BOS will illuminate due to high-speed traffic on crossing runways when a vehicle is in THL arming region
Runway Intersection Lights (RILs)

RILS are red when it is unsafe to enter a runway intersection

RILs are installed as a 3000 foot long double row on either side of Runways 9 and 15R centerlines
Protocol for Vehicle Operators Viewing Red RILs

• If RILs are illuminated red, the runway intersection is unsafe for entry or crossing
  – A vehicle operator seeing illuminated RILs should safely stop!
  – ATC can not clear a vehicle to cross an illuminated RIL

• If stopping is impractical for safety reasons
  – Vehicle operators should proceed according to their best judgment of safety (understanding that the illuminated RILs indicate the runway intersection is unsafe to enter or cross) and contact ATC at the earliest opportunity

• In critical conflict situations
  – Vehicle operators should utilize the information from RILs (intersection is unsafe) then take the appropriate actions to prevent a collision according to your best judgment of safety e.g. exit the runway.

RILs indicate runway status only; they do not indicate clearance!

DO NOT CROSS RED LIGHTS even if cleared by ATC
RWSL Protocol for ATC and Vehicle Operators

• ATC should not clear vehicle operators through runway intersection ahead with illuminated RED RELs or THLs
  – Vehicle operators should immediately STOP upon viewing illuminated RELs and THLs and notify ATC even if they were previously cleared.
  – When re-cleared by ATC, vehicle operators may drive over illuminated RELs and THLs on any portion of runway up to first runway/runway intersection covered by RILs

• ATC may not clear vehicle operators to cross or drive through illuminated RED RILs

• Vehicle operators should notify ATC and report light strings that are not operating correctly. (e.g. lights not activating, stuck on, string burned out, etc.) Report individual light outages to MASSPORT maintenance
RWSL Maintenance/Lighting Tests

• Maintenance personnel will coordinate with on-duty ATC supervisor for RWSL field lighting tests

• ATC will facilitate RWSL testing:
  
  – Light intensity levels
    • RWSL automatically uses predetermined levels for day/night operations

  – Lights ON/OFF for maintenance
    • During manual testing, RWSL safety logic will not automatically illuminate lights
    • ATC will resume automatic RWSL operation upon completion of manual light testing
Operational Evaluation Schedule and Tasks

• **Daily testing**
  – Commencing on/about June 1, 2010
  – Duration of three (3) months – option to extend if successful
  – All weather conditions present, all flows, 24/7

• **BOS vehicle operators**
  – Safely STOP, do not cross illuminated RED RELs, THLs or RILs
  – Notify ATC if lights illuminate even if you were previously cleared by ATC
  – ATC at their discretion may approve crossing illuminated RELs/THLs only

• **Vehicle operators feedback**
  – Vehicle operators requested to submit survey responses online at [www.RWSL.net](http://www.RWSL.net)
Questions & Discussion