U. S. S. MASSACHUSETTS

BATTLE BILL

Part III - Fire Control

3. SECONDARY BATTERY

3. SECONDARY BATTERY

1. THE SECONDARY BATTERY STATIONS ARE:-

Call Station Air Defense Forward Air Defense Air Defense Aft Defense Aft Secondary Battery Switchboard Switchboard Secondary Battery Director No. 1 Control One Secondary Battery Director No. 2 Control Two Secondary Battery Director No. 3 Control Three Secondary Battery Director No. 4 Control Four Director No. 1 Spotter Air Spot One Director No. 2 Spotter Air Spot Two Director No. 3 Spotter Air Spot Three Director No. 4 Spotter Air Spot Four Director No. 1 Rangefinder Seven Range Director No. 2 Rangefinder Six Range Director No. 3 Rangefinder Nine Range Director No. 4 Rangefinder Eight Range Light One Searchlight No. 1 Searchlight No. 2 Light Two Light Three Searchlight No. 3 Searchlight No. 4 Light Four Twin Mounts No. 1 through No. 10 Mount One, Mount Two, etc. Computer One Computer No. 1 Computer Two Computer Three Computer No. 2 Computer No. 3 Computer No. 4 Computer Four Stable Element No. 1 Element One Stable Element No. 2 Element Two Stable Element No. 3 Element Three Stable Element No. 4 Element Four Secondary Battery Plotting Room Plot Searchlight Corrector Defense Correctors Air Defense Forward Searchlight Correctore Housetop Captain's Correctors

AIR DEFENSE FORWARD

AIR DEFENSE FORWARD

1. Air Defense Officer:

Receives readiness report from secondary battery group control officers, machine gun control officers, and plotting room officer, and reports to control.

Determines condition of readiness, method of grouping and firing battery, and probable ship and target maneuvers on the basis of information received from conn and control, and issues necessary orders to group control officer and plotting room officer.

Controls secondary battery fire on surface and air targets and controls starshell and searchlight illumination.

Designates targets and orders commence and cease firing.

Keeps conn and control informed of all pertinent information and keeps group control and plotting room officers informed of general situation, target data, probable ship maneuvers, etc.

Keeps informed of ammunition on hand and expended, casualties and repairs, loaded guns, results of fire control tests, and any other data necessary for the operation of the batteries.

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AIR DEFENSE FORWARD (Con't.)

2. Machine Gun Control Officer, Forward:

Receives readiness reports from Sky One, Sky Two, 20 MM Machine Gun, Groups One, Two and Three battery officers and reports ready to air defense, officer.

Controls forward machine gun battery fire on air targets and on high speed surface targets within range.

Supervises sky lookouts, forward.

3. Talkers:

Establishes communications on telephone circuits and report ready to the Air Defense Officer. When not engaged in talking, act as supplementary sky, surface, and horizon lookouts in all sectors.

4. Sky Lookouts:

On-watch group (four lookouts) maintain constant search of sky, each within assigned ninety degree sector, reporting objects sighted to the Air Defense Officer, Off-watch group (four lookouts) man JL phones and relieve on-watch group every 15 minutes.

5. Target Designator Operators:

Check equipment and pick up objects sighted by lookouts. Transmit designations to gun control stations as directed by Air Defense Officer. Act as supplementary lookouts. Man 5JP phone.

AIR DEFENSE AFT

1. Machine Gun Control Officer, Aft:

Receives readiness reports from Sky Three, Four, Five, and Six, 20 MM Machine Gun Groups Four, Five, and Six Battery Officers and reports ready to Air Defense Officer.

Controls after machine gun battery fire on air targets and high speed surface targets within range.

Supervises sky lookouts, aft. Assumes the duties of the Air Defense Officer in the event of casualty to Air Defense Forward.

2. Talkers:

Establishes communications on telephone circuits and reports ready to the machine gun control officer aft. When not engaged in talking, acts as supplementary surface and horizon lookouts in all sectors.

3. Sky Lookouts:

On-watch group (two lookouts) maintain constant search of sky, each within assigned ninty degree sector, and reports objects sighted to the sky control officer and to the machine gun control officer aft.

Off-watch group (two lookouts) man JL telephone, and relieve on-watch group every 15 minutes.

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SECONDARY BATTERY DIRECTORS

1. Control Officer:

Establishes communication on JP circuit, receives readiness reports from spotter, and from mount captains and computer operator assigned the group, and reports ready to Air Defense Forward.

Receives target designation, grouping and firing instructions and battle orders from Air Defense Forward and issues necessary instructions to plot and mounts.

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3. SECONDARY BATTERY

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AIR DEFENSE FORWARD

AIR DEFENSE FORWARD

1. Air Defense Officer:

Receives readiness report from secondary battery group control officers, machine gun control officers, and plotting room officer, and reports to control.

Determines condition of readiness, method of grouping and firing battery, and probable ship and target maneuvers on the basis of information received from conn and control, and issues necessary orders to group control officer and plotting room officer.

Controls secondary battery fire on surface and air targets and controls starshell and searchlight SECONDARY DARTHHY DERECTY

2. Control Officer: illumination.

Designates targets and orders commence and cease firing.

Keeps conn and control informed of all pertinent information and keeps group control and plotting room officers informed of general situation, target data, probable ship maneuvers, etc.

Keeps informed of ammunition on hand and expended, casualties and repairs, loaded guns, results of

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AIR DEFENSE FORWARD (Con't.)

2. Machine Gun Control Officer, Forward:

Receives readiness reports from Sky One, Sky Two, 20 MM Machine Gun, Groups One, Two and Three battery officers and reports ready to air defense, officer.

Controls forward machine gun battery fire on air targets and on high speed surface targets within range.

Supervises sky lookouts, forward.

3. Talkers:

Establishes communications on telephone circuits and report ready to the Air Defense Officer. When not engaged in talking, act as supplementary sky, surface, and horizon lookouts in all sectors.

4. Sky Lookouts:

On-watch group (four lookouts) maintain constant search of sky, each within assigned ninety degree sector, reporting objects sighted to the Air Defense Officer, Off-watch group (four lookouts) man JL phones and relieve on-watch group every 15 minutes.

5. Target Designator Operators:

Check equipment and pick up objects sighted by lookouts. Transmit designations to gun control stations as directed by Air Defense Officer. Act as supplementary lookouts. Man 5JP phone.

AIR DEFENSE AFT

1. Machine Gun Control Officer, Aft:

Receives readiness reports from Sky Three, Four, Five, and Six, 20 MM Machine Gun Groups Four, Five, and Six Battery Officers and reports ready to Air Defense Officer.

Controls after machine gun battery fire on air targets and high speed surface targets within range. Supervises sky lookouts, aft. Assumes the duties of the Air Defense Officer in the event of casualty to Air Defense Forward.

2. Talkers:

Establishes communications on telephone circuits and reports ready to the machine gun control officer aft. When not engaged in talking, acts as supplementary surface and horizon lookouts in all sectors.

3. Sky Lookouts:

On-watch group (two lookouts) maintain constant search of sky, each within assigned ninty degree sector, and reports objects sighted to the sky control officer and to the machine gun control officer aft.

Off-watch group (two lookouts) man JL telephone, and relieve on-watch group every 15 minutes.

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SECONDARY BATTERY DIRECTORS

1. Control Officer:

Control Officer:

Establishes communication on JP circuit, receives readiness reports from spotter, and from mount Marit Par. captains and computer operator assigned the group, and reports ready to Air Defense Forward.

Receives target designation, grouping and firing instructions and battle orders from Air Defense Forward and issues necessary instructions to plot and mounts.

SECONDARY BATTERY DIRECTORS (Con't.)

Supervises operations of director personnel and exercises control over the mounts assigned his group,

Operates slewing switch and sight, check sight, portable firing key and salvo signal, parallax knob, battle and shell order transmitters, deflection and elevation spot transmitters, and searchlight corrector and order transmitter.

Controls starshell fire and searchlights assigned his group.

Checks set-up of the director in stand-by, firing and secured conditions, and directs action necessary in the event of casualty to the director.

2. Spotter:

Establishes communication on the JW circuit, receives readiness reports from director crew, takes and sets range finder internal adjustments, and reports ready to the director control officer.

Operates the internal adjuster, range knob, magnification knob, range finder elevation knob, range spot transmitter and range signal button.

Keeps the director control officer and plot informed of range of the day estimate, ceiling, wind direction and speed, target type, target speed, target angle and rate of climb or dive.

Ranges on target, using range signal button, spots in range and deflection and reports target maneuvers.

3. Trainer:

Opens front sight cover, removes centering pin, sets power switch on "turbo," starts train motor, matches indicators, sets train receiver regulator switch on automatic, and reports ready to spotter.

Operates director in train, rate controlling as necessary, and operates firing switch if directed. Keeps control officer informed of cable twist dial reading.

4. Pointer:

Opens front cover on own and control officer sights, matches indicators in elevation, starts elevation motor, puts elevation receiver regulator switch on automatic, and reports ready to spotter.

Operates director in elevation, using rate control and firing key as directed. If plot is out of action, transmits fuze setting to mounts by JK circuit.

5. Rangefinder Operator:

Turns on magnetic controller switches, sets parallax knob on automatic, inserts cross-level centering pin, casts loose rangefinder, unlocks cross-level centering pin, starts cross-level follow-up, averages and sets internal adjustment, turns on change of range receiver switch, sets range of day, establishes communication with plot on JW circuit, and reports ready to spotter.

Acts as lookout and assistant spotter. If plot is out of action, sends sight angle and deflection to mounts on JQ circuit.

6. Talker:

Assists rangefinder operator in casting loose rangefinder, establishes communication of 5JP circuit, and reports ready to spotter, Relays 5JP circuit information and orders to director control officer and acts as lookout.

SECONDARY BATTERY PLOTTING ROOM

1. Plotting Room Officer:

Receives reports of readiness from computer operators and switchboard supervisors and reports plot ready to sky forward.

Computes ballistic, and keeps ballistic data board up to date. Supervises operation of computers, Stable elements and switchboards in plotting room, and controls all changes in switchboard settings through the switchboard supervisor.

2. Switchboard Supervisor:

Receives reports of readiness from FC and IC switchboard operators, assisting when necessary. Makes emergency repairs to fire control instruments and switchboards.

Reports telephone switchboard ready to plotting room officer. Makes changes in switchboard settings according to orders received over 5JP circuit from plotting room officer.

Supervises stable element switchboard operator. Makes emergency repairs to telephone switchboard and plotting room telephones.

Operates stable element switchboard and battle announcing amplifier ready to battle telephone switchboard operator.

Operates stable element ewitchboard and battle announcing amplifier keeping continuous check on pilot lights and meters.

Assists in setting telephone switchboard according to orders received from telephone switchboard operator. Makes emergency repairs to stable element switchboard and all electrical equipment other than fire control.

Makes initial setting on director, computer and searchlight switchboards and reports ready to switchboard supervisor.

Changes switchboard settings according to orders received over 5JP circuit or from switchboard supervisor, and assists in making emergency repairs on own switchboards.

3. IC Switchboard Operator:

Makes initial settings of IC circuits and reports ready to switchboard supervisor.

Changes switchboard settings according to orders received over 5JP circuit or from switchboard supervisor, and assists in making emergency repairs on own switchboards.

4. First Assistant Switchboard Operator:

Makes initial settings on fire control switchboards for port side mounts and reports to switchboard supervisor.

Changes switchboard settings according to orders received over 5JP circuit or from switchboard supervisor, and assists in making emergency repairs on own switchboards.

5. Second Assistant Switchboard Operator:

Makes initial settings on fire control switchboards for starboard side mounts, and reports ready to switchboard supervisor.

Changes switchboard settings according to orders received over 5JP circuit or from switchboard supervisor, and assists in making emergency repairs on own switchboards.

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6. JA Talker:

Reports ready to plotting room officer when communications are established.

Relays JA circuit gunnery and ship control information to plotting room officer.

7. JV Talker:

Reports ready to plotting room officer when communications are established and wind indicator, compass repeater, pitometer log and multiple director train indicators are energized.

SECONDARY BATTERY DIRECTORS (Con't.)

Supervises operations of director personnel and exercises control over the mounts assigned his group.

Operates slewing switch and sight, check sight, portable firing key and salvo signal, parallax knob, battle and shell order transmitters, deflection and elevation spot transmitters, and searchlight corrector and order transmitter.

Controls starshell fire and searchlights assigned his group.

Checks set-up of the director in stand-by, firing and secured conditions, and directs action necessary in the event of casualty to the director.

2. Spotter:

Establishes communication on the JW circuit, receives readiness reports from director crew, takes and sets range finder internal adjustments, and reports ready to the director control officer.

Operates the internal adjuster, range knob, magnification knob, range finder elevation knob, range spot transmitter and range signal button.

Keeps the director control officer and plot informed of range of the day estimate, ceiling, wind direction and speed, target type, target speed, target angle and rate of climb or dive.

Ranges on target, using range signal button, spots in range and deflection and reports target maneuvers.

3. Trainer:

Opens front sight cover, removes centering pin, sets power switch on "turbo," starts train motor, matches indicators, sets train receiver regulator switch on automatic, and reports ready to spotter.

Operates director in train, rate controlling as necessary, and operates firing switch if directed. Keeps control officer informed of cable twist dial reading.

4. Pointer:

Opens front cover on own and control officer sights, matches indicators in elevation, starts elevation motor, puts elevation receiver regulator switch on automatic, and reports ready to spotter.

Operates director in elevation, using rate control and firing key as directed. If plot is out of action, transmits fuze setting to mounts by JK circuit.

5. Rangefinder Operator:

Turns on magnetic controller switches, sets parallax knob on automatic, inserts cross-level centering pin, casts loose rangefinder, unlocks cross-level centering pin, starts cross-level follow-up, averages and sets internal adjustment, turns on change of range receiver switch, sets range of day, establishes communication with plot on JW circuit, and reports ready to spotter.

Acts as lookout and assistant spotter. If plot is out of action, sends sight angle and deflection to mounts on JQ circuit.

6. Talker:

Assists rangefinder operator in casting loose rangefinder, establishes communication of 5JP circuit, and reports ready to spotter, Relays 5JP circuit information and orders to director control officer and acts as lookout.

SECONDARY BATTERY PLOTTING ROOM

1. Plotting Room Officer:

Receives reports of readiness from computer operators and switchboard supervisors and reports plot ready to sky forward.

Computes ballistic, and keeps ballistic data board up to date. Supervises operation of computers, Stable elements and switchboards in plotting room, and controls all changes in switchboard settings through the switchboard supervisor.

2. Switchboard Supervisor:

Receives reports of readiness from FC and IC s vitchboard operators, assisting when necessary. Makes emergency repairs to fire control instruments and switchboards.

Reports telephone switchboard ready to plotting room officer. Makes changes in switchboard settings according to orders received over 5JP circuit from plotting room officer.

Supervises stable element switchboard operator. Makes emergency repairs to telephone switchboard and plotting room telephones.

Operates stable element switchboard and battle announcing amplifier ready to battle telephone switchboard operator.

Operates stable element ewitchboard and battle announcing amplifier keeping continuous check on pilot lights and meters.

Assists in setting telephone switchboard according to orders received from telephone switchboard operator. Makes emergency repairs to stable element switchboard and all electrical equipment other than fire control.

Makes initial setting on director, computer and searchlight switchboards and reports ready to switch-board supervisor.

Changes switchboard settings according to orders received over 5JP circuit or from switchboard supervisor, and assists in making emergency repairs on own switchboards.

3. IC Switchboard Operator:

Makes initial settings of IC circuits and reports ready to switchboard supervisor.

Changes switchboard settings according to orders received over 5JP circuit or from switchboard supervisor, and assists in making emergency repairs on own switchboards.

4. First Assistant Switchboard Operator:

Makes initial settings on fire control switchboards for port side mounts and reports to switchboard supervisor.

Changes switchboard settings according to orders received over 5JP circuit or from switchboard supertwisor, and assists in making emergency repairs on own switchboards.

5. Second Assistant Switchboard Operator:

Makes initial settings on fire control switchboards for starboard side mounts, and reports ready to switchboard supervisor.

Changes switchboard settings according to orders received over 5JP circuit or from switchboard supervisor, and assists in making emergency repairs on own switchboards.

6. JA Talker:

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Reports ready to plotting room officer when communications are established.

Relays JA circuit gunnery and ship control information to plotting room officer.

7. JV Talker:

Reports ready to plotting room officer when communications are established and wind indicator, compass repeater, pitometer log and multiple director train indicators are energized.

Relays JV circuit ship control information to plotting room officer, and checks operation of ship's course and speed indicators with information on JV circuit.

8. Computer Operators:

Receive reports of readiness from own computer and stable element group, test communications on JW circuit, see that computer and stable element are manned and in standby condition, and report ready to plotting room officer.

Conduct setting up and solution of problem, and supervise operations of computer and stable element group.

Keep informed of latest ballistic data and own group switchboard settings. Shift to tracking, firing or secured condition, and automatic, semi-automatic or manual method as ordered by plotting room officer.

Operate control switch, change of range switch, range set signal, range rate diving speed knob, target angle knob, target speed knob, rate of climb knob, range spot knob and generated range knob.

Check and report computer in secured condition when that condition is ordered.

9. Elevation Rate Controller:

Establishes communications on JP circuit, set own controls for standby condition, and report ready to computer operator.

Operate power switch, time motor switch, initial velocity switch, dead time switch, own ship's course knob, own ship's speed knob, wind direction knob, wind speed knob, synchronize elevation knob, generated elevation knob and elevation range and deflection spot knobs.

Relay JP circuit information to computer operator.

Operate elevation dials according to doctrine. Set own controls and report when secured condition is ordered.

10. Sight Follow-up Operator:

Establish communications on JQ circuit, set own controls for standby condition, and report ready to computer operator.

Operate sight deflection knob, and sight angle knob.

Relay JQ circuit information to computer operator. Transmit sight angles and deflection to guns by automatic, manual or voice method, corrected for starshell control when so ordered.

Set own controls and report when secured condition is ordered.

11. Bearing Rate Controller:

Start stable element with assistance of stable element switchboard operator, establish communications on 17MC circuit, set own controls for standby condition, and report ready to computer operator.

Operate generated bearing knob, and gun elevation order knob.

Relay 17MC circuit information to computer operator.

Watch generated and observed bearing, and keep operator informed of movement of generated and observed bearing.

Set own controls, secure stable element and report, when secured condition is ordered.

12. Fuzesetters Follow-up Operator:

Established communications on JK circuit, set own controls for standby condition, and report ready to computer operator.

Operate the fuze knob.

Relay JK circuit information to operator.

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SECONDARY BATTERY PLOTTING ROOM (Con't.)

Transmit fuze setting to guns by automatic, manual or voice method, correcting for starshell control when so ordered.

Set own control and report when secured condition is ordered.

13. Level Follow-up Operator:

Establish communications on JP circuit, check stable element switches and report ready to computer operator.

Operate selector and follow-up switches, salvo signal, and automatic and hand firing keys.

Relay JP circuit information to computer operator.

Operate follow-up and firing keys in level or cross-level as ordered by computer operator.

14. Cross-levellers Follow-up Operator:

Check setting of cross-level switches and report ready to leveller.

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Operate cross-level follow-up, and assist leveller in operating level follow-up.

FIRE CONTROL SEARCHLIGHTS

1. Electricians:

Strike arcs in searchlights of own group when ordered by illumination control officer. Operate arc mechanism, make emergency repairs and adjustments, replace carbons when necessary, check carbon feed and rotation, arc position and cooling fan while light is in use. Break arc when ordered. Insure that a supply of spare carbons is on hand.

2. Pointers:

Man JT phone, place light in automatic control, and report ready to sky forward. Check operation of power drive in elevation and automatic shutter control. Shift to manual control if automatic control fails, and match pointers in elevation. Relay JT circuit train orders to trainer. Secure light in elevation when

3. Trainers:

Place light in automatic control in train and report ready to pointer. Check operation of light in train, and, in case of failure of automatic control, shift to manual and match pointers or follow JT circuit verbal train orders. Relay searchlight battle order indicator signals to electrician and pointer. Secure light in train when ordered.

Note: The duties of Battery Officers and Mount Crews may be found in the ship's Gunnery Instructions under "Service of the 5 inch 38 Caliber Twin Mount."

Relays JV circuit ship control information to plotting room officer, and checks operation of ship's course and speed indicators with information on JV circuit.

8. Computer Operators:

Receive reports of readiness from own computer and stable element group, test communications on JW circuit, see that computer and stable element are manned and in standby condition, and report ready to plotting room officer.

Conduct setting up and solution of problem, and supervise operations of computer and stable element group.

Keep informed of latest ballistic data and own group switchboard settings. Shift to tracking, firing or secured condition, and automatic, semi-automatic or manual method as ordered by plotting room officer.

Operate control switch, change of range switch, range set signal, range rate diving speed knob, target angle knob, target speed knob, rate of climb knob, range spot knob and generated range knob.

Check and report computer in secured condition when that condition is ordered.

9. Elevation Rate Controller:

Establishes communications on JP circuit, set own controls for standby condition, and report ready to computer operator.

Operate power switch, time motor switch, initial velocity switch, dead time switch, own ship's course knob, own ship's speed knob, wind direction knob, wind speed knob, synchronize elevation knob, generated elevation knob and elevation range and deflection spot knobs.

Relay JP circuit information to computer operator.

Operate elevation dials according to doctrine. Set own controls and report when secured condition is ordered.

10. Sight Follow-up Operator:

Establish communications on JQ circuit, set own controls for standby condition, and report ready to computer operator.

Operate sight deflection knob, and sight angle knob.

Relay JQ circuit information to computer operator. Transmit sight angles and deflection to guns by automatic, manual or voice method, corrected for starshell control when so ordered.

Set own controls and report when secured condition is ordered.

11. Bearing Rate Controller:

Start stable element with assistance of stable element switchboard operator, establish communications on 17MC circuit, set own controls for standby condition, and report ready to computer operator.

Operate generated bearing knob, and gun elevation order knob.

Relay 17MC circuit information to computer operator.

Watch generated and observed bearing, and keep operator informed of movement of generated and observed bearing.

Set own controls, secure stable element and report, when secured condition is ordered.

12. Fuzesetters Follow-up Operator:

Established communications on JK circuit, set own controls for standby condition, and report ready to computer operator.

Operate the fuze knob.

Relay JK circuit information to operator.

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SECONDARY BATTERY PLOTTING ROOM (Con't.)

Transmit fuze setting to guns by automatic, manual or voice method, correcting for starshell control when so ordered.

Set own control and report when secured condition is ordered.

13. Level Follow-up Operator:

Establish communications on JP circuit, check stable element switches and report ready to computer operator.

Operate selector and follow-up switches, salvo signal, and automatic and hand firing keys.

Relay JP circuit information to computer operator.

Operate follow-up and firing keys in level or cross-level as ordered by computer operator.

14. Cross-levellers Follow-up Operator:

Check setting of cross-level switches and report ready to leveller.

Operate cross-level follow-up, and assist leveller in operating level follow-up.

FIRE CONTROL SEARCHLIGHTS

1. Electricians:

Strike arcs in searchlights of own group when ordered by illumination control officer. Operate arc mechanism, make emergency repairs and adjustments, replace carbons when necessary, check carbon feed and rotation, arc position and cooling fan while light is in use. Break arc when ordered. Insure that a supply of spare carbons is on hand.

2. Pointers:

Man JT phone, place light in automatic control, and report ready to sky forward. Check operation of power drive in elevation and automatic shutter control. Shift to manual control if automatic control fails, and match pointers in elevation. Relay JT circuit train orders to trainer. Secure light in elevation when ordered,

3. Trainers:

Place light in automatic control in train and report ready to pointer. Check operation of light in train, and, in case of failure of automatic control, shift to manual and match pointers or follow JT circuit verbal train orders. Relay searchlight battle order indicator signals to electrician and pointer. Secure light in train when

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