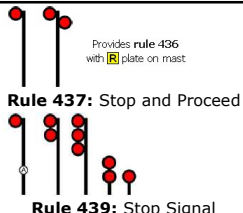# Signal Animator
CTC MODE TRUTH TABLE

Inputs are active low. With nothing connected, they will be held at a high level and the driving circuit must connect it to ground to provide an active input. Low inputs on the table are indicated with a zero (0), high inputs with a (1), and inputs that do not matter are indicated with "X".
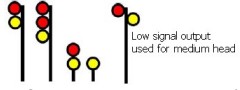
Inputs **RD**, **YL**, and **GN** are the DCA inputs. When all are high, the signal display will be dark. The **RD** input alone indicates Danger and when active it results in a stop indication, regardless of the state of the speed inputs. The **GN** input alone indicates Clear and when active it results in the most permissive indication being displayed, depending on the Entry and Approach speed inputs.

The Approach indication may be provided either by an **YL** active input alone, or by a combined **RD** and **GN** active inputs. This will result in a "*something* to stop" indication being displayed, with the *something* being determined by the Entry speed inputs. An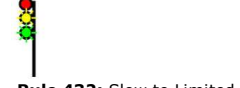 active **YL** input at the same time as either or both the **RD** or **GN** inputs are active is invalid and will result in a dark signal display.
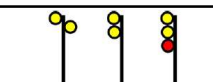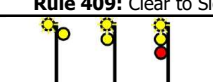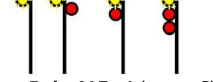
EL, **EM**, **ES**, and **ER** are the Entry speed inputs, indicating Limited, Medium, Slow, and Restricting speeds respectively. Their state indicates the speed restriction for the block the signal is protecting entry to.

AL, **AM**, **AS**, and **AR** are the Approach speed restricting inputs, indicating Limited, Medium, Slow, and Restricting speeds respectively. Their state indicates the speed the next signal should be approached at.

	Inputs												Signal Indication
	AV	GN	YL	RD	AL	AM	AS	AR	EL	EM	ES	ER	
	X	1	1	1	X	X	X	X	X	X	X	X	dark
	All DCA inputs inactive.												
Invalid inputs.	X	1	0	0	X	X	X	X	X	X	X	X	dark
	X	0	0	1	X	X	X	X	X	X	X	X	
	X	0	0	0	X	X	X	X	X	X	X	X	
	YL DCA input active with GN or RD or both active.												
"Stop" indications.	X	1	1	0	X	X	X	X	X	X	X	X	Provides rule 436 with ⓡ plate on mast. **Rule 437:** Stop and Proceed
	DCA inputs: only RD active.												**Rule 439:** Stop Signal

Inputs													Signal Indication
	AV	GN	YL	RD	AL	AM	AS	AR	EL	EM	ES	ER	
Restricting indication.	X	1	0	1	X	X	X	X	X	X	X	0	**Rule 436:** Restricting Signal
	X	0	1	1	X	X	X	X	X	X	X	0	Low signal output used for medium head
	Entry speed input ER active with YL or GN input active.												
DCA inputs: RD and GN active, or YL active. "Something to Stop" indications.	X	1	0	1	X	X	X	X	X	X	0	1	**Rule 435:** Slow to Stop
	X	1	1	0	X	X	X	X	X	X	0	1	Low signal output used for medium head
	Entry speed inputs: ES active; ER *not* active.												
	X	1	0	1	X	X	X	X	X	0	1	1	**Rule 427:** Medium to Stop
	X	0	1	0	X	X	X	X	X	0	1	1	Provides **rule 421** with [L] plate on mast
	Entry speed inputs: EM active; ES and ER *not* active.												
	X	1	0	1	X	X	X	X	0	1	1	1	**Rule 421:** Limited to Stop
	X	0	1	0	X	X	X	X	0	1	1	1	
	Entry speed inputs: EL active; EM, ES, and ER *not* active.												
	X	1	0	1	X	X	X	X	1	1	1	1	**Rule 411:** Clear to Stop
	X	0	1	0	X	X	X	X	1	1	1	1	
	No entry speed inputs active.												
DCA inputs: only GN active; Entry speed inputs: ES active; ER inactive. "Slow to Something" indications.	X	0	1	1	X	X	X	0	X	X	0	1	dark
	"Slow to Restricting" indication is invalid.												
	X	0	1	1	X	X	0	1	X	X	0	1	**Rule 434:** Slow to Slow
	Approach speed inputs: AS active; AR *not* active.												
	X	0	1	1	X	0	1	1	X	X	0	1	**Rule 433:** Slow to Medium
	Approach speed inputs: AM active; AS *not* active.												
	X	0	1	1	0	1	1	1	X	X	0	1	**Rule 432:** Slow to Limited
	Approach speed inputs: AL active; AM and AS *not* active.												
	X	0	1	1	1	1	1	1	X	X	0	1	Low signal output used for medium head
	No Approach speed inputs active.												**Rule 431:** Slow to Clear

Inputs													Signal Indication
	AV	GN	YL	RD	AL	AM	AS	AR	EL	EM	ES	ER	
DCA inputs: only GN active; Entry speed inputs: EM active, ES, and ER inactive. "Medium to Something" indications.	X	0	1	1	X	X	X	0	X	0	1	1	Provides **rule 420** with ◣ plate on mast **Rule 426:** Medium to Restricting
	Approach speed inputs: AR active.												
	X	0	1	1	X	X	0	1	X	0	1	1	**Rule 425:** Medium to Slow
	Approach speed inputs: AS active; AR *not* active.												
	X	0	1	1	X	0	1	1	X	0	1	1	**Rule 424:** Medium to Medium
	Approach speed inputs: AM active; AR and AS *not* active.												
	X	0	1	1	0	1	1	1	1	0	1	1	**Rule 423:** Medium to Limited
	Approach speed inputs: AL active; AR, AS, and AM *not* active.												
	X	0	1	1	1	1	1	1	1	0	1	1	Provides **rule 416** with ◣ plate on mast **Rule 422:** Medium to Clear
	No Approach speed restriction inputs are active.												
DCA inputs: only GN active; Entry speed inputs: EL active, EM, ES, and ER inactive. "Limited to Something" indications.	X	0	1	1	1	1	1	0	0	1	1	1	**Rule 420:** Limited to Restricting
	Approach speed inputs: AR active.												
	X	0	1	1	1	1	0	1	0	1	1	1	**Rule 419:** Limited to Slow
	Approach speed inputs: AS active; AR *not* active.												
	X	0	1	1	1	0	1	1	0	1	1	1	**Rule 418:** Limited to Medium
	Approach speed inputs: AM active; AS and AR *not* active.												
	X	0	1	1	0	1	1	1	0	1	1	1	**Rule 417:** Limited to Limited
	Approach speed inputs: AL active; AM, AS, and AR *not* active.												
	X	0	1	1	1	1	1	1	0	1	1	1	**Rule 416:** Limited to Clear
	No Approach speed restriction inputs are active.												

Inputs													Signal Indication
	AV	GN	YL	RD	AL	AM	AS	AR	EL	EM	ES	ER	
DCA inputs: only GN active; no entry speed inputs active. "Clear to Something" indications.	X	0	1	1	X	X	X	0	1	1	1	1	**Rule 410:** Clear to Restricting
	Approach speed inputs: AR active.												
	1	0	1	1	X	X	0	1	1	1	1	1	**Rule 409:** Clear to Slow
	Approach speed inputs: AS active; AR *not* active.												
	0	0	1	1	X	X	0	1	1	1	1	1	**Rule 414:** Advance Clear to Slow
	AV active; Approach speed inputs: AS active; AR *not* active.												
	1	0	1	1	X	0	1	1	1	1	1	1	**Rule 407:** Clear to Medium
	Approach speed inputs: AM active; AS and AR *not* active.												
	0	0	1	1	X	0	1	1	1	1	1	1	**Rule 413:** Advance Clear to Medium
	AV active; Approach speed inputs: AM active; AS and AR *not* active.												
	1	0	1	1	0	1	1	1	1	1	1	1	**Rule 406:** Clear to Limited
	Approach speed inputs: AL active; AM, AS, and AR *not* active.												
	0	0	1	1	0	1	1	1	1	1	1	1	**Rule 412:** Advance Clear to Limited
	AV active; Approach speed inputs: AL active; AM, AS, and AR *not* active.												
	0	0	1	1	1	0	1	1	1	1	1	1	**Rule 415:** Advance Clear To Stop
	AV active; No Approach speed inputs active.												
	1	0	1	1	1	1	1	1	1	1	1	1	**Rule 405:** Clear Signal
	No Approach speed inputs active.												

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