

Recommended Practices for Computer-Aided Track Signal (CATS)

File Development

Version 3.0

February 14, 2015

I. Terminology

1. **Active Module** – is a module that has an installed signal logic board and occupancy detectors. This module should have dispatcher controlled turnouts and has signals. The dispatcher can set the train route and signals from his Dispatcher Panel. This module by design will pass block status information to the adjacent modules, whether they are an Active Module or Passive Module.
2. **DCC Buss** - a communications wire, minimum standard Category 5 (CAT-5 or CAT-5E), installed on all Active and Passive Modules which carries train control command information.
3. **Signal Bus** - a communications wire, minimum standard Category 5 (CAT-5 or CAT-5E), installed on all Active and Passive Modules which carries information between Signal Logic Boards
4. **Dispatcher Panel** – computer display showing the train layout, location of trains, and provides dispatcher the tools needed to control train traffic.
5. **Occupancy Detectors** – a collector device that senses electrical activity between rails within a track segment.
6. **Passive Module** – is a module within the layout which does not have any controlled turnouts or signals. The module is seen within the block on the Dispatcher Panel and shows as being occupied or unoccupied based on the information it receives from the last active track segment from an adjoining Active Module.
7. **Signal Aspects** – light color displayed on a signal providing train movement orders to an engineer.
8. **Signal Logic Board** – a printed circuit board having input and output contacts to show location of trains, position of turnout points and light appropriate signal aspects on the Active Module.
9. **Track Segments** – are blocks on Active Modules that provide information to control signals and display train activity to the Dispatcher Panel.
10. **End Track Segments** – are blocks at the ends of all tracks on a module which will connect to adjoining end track segments on adjacent modules.

GENERAL NOTE

All references to direction in this documentation assumes viewing a module from the front with the end of the module on your right being "EAST" and the end of the module on your left being "WEST"

II. CATS File GRID Sizes

1. Size Active Module

- A. Width: 12 (maximum)
- B. Height: 10
- C. If two modules are always displayed together in the same order, they may be defined in a single CATS file. The width can expand to 24 if required but if the two module set can be defined in a space less than 24 grid cells that should be done to conserve linear space on the dispatcher panel.
- D. All track must have a CATS defined block boundary at the right (*east*) and left (*west*) side of a CATS file whether inner main, outer main or third (*local*) track.
- E. Minimum number of block boundaries is three on each track.

2. Size Simple Passive Module

- A. Width: 6
- B. Height: 10
- C. All track must have a CATS defined block boundary at the right (*east*) and left (*west*) side of a CATS file whether inner main, outer main or third track.
- D. Minimum number of block boundaries is two on each track.
- E. None of the block boundaries need to be defined.

III. Designing Track

(Details to come)

IV. Block Naming Conventions

1. Outer Main

- A. Design assumes normal train traffic flow is West to East
- B. Each Block, whether it be signal or power, defined or undefined, is referred to as a Track Segment
- C. First Track Segment is (*starting from the west end*) is undefined and referred to as End Track Segment 0
 - a. Activity displayed in CATS is driven from the adjacent module
 - b. Will display in "Designer" as a "Red Line"
 - c. Will not display in CATS when loaded as a stand-alone file
- D. The next Track Segment will be referred to as Track Segment 1 and each subsequent segment will increment by one digit.
- E. The very last track segment is also referred to as an End Track Segment, and this segments' activity in CATS will drive to the adjacent module.
- F. Define the track segment using a unique name
 - a. Naming convention is critical as no two track segments can have the same name
 - b. Across the ENTIRE module setup each track segment MUST have a unique name
 - c. Also helpful in debugging occupancy and signals as will be seen later
- G. Use a standardized naming system for future debugging and Sensor monitoring as follows:

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- a. Block Name – Should be Module Name
- b. Main Line Description – Outer Main = “OM”; Inner Main = “IM”
- c. Normal Train Traffic Flow – East = “E”
- d. Track Segment Identity – “TS#”
 - i. “TS#” for all intermediate track segments between end track segments (numbers; ie. 1,2,3,4,etc)
 - ii. “ETS#” for the End track segments (next sequential number)

H. Block Name Example

- i. first intermediate track segment - Twin Peaks OME TS1
- ii. last track segment assuming a total of three intermediate segments - Twin Peaks OME ETS4

2. Inner Main

- A. Design assumes normal train traffic flow is East to West
- B. Each Block, whether it be signal or power, defined or undefined, is referred to as a Track Segment
- C. First Track Segment (*starting from the east end*) is Undefined and referred to as Track Segment 0
 - a. Activity displayed in CATS is driven from the adjacent module
 - b. Will display in “Designer” as a “Red Line”
 - c. Will not display in CATS when loaded as a stand-alone file
- D. The next Track Segment will be referred to as Track Segment 1 and each subsequent segment will increment by one digit.
- E. The very last track segment is also referred to as an End Track Segment, and this segments’ activity in CATS will drive to the adjacent module.
- F. Define the track segment using a unique name
 - a. Naming convention is critical as no two track segments can have the same name
 - b. Across the ENTIRE module setup each track segment MUST have a unique name
 - c. Also helpful in debugging occupancy and signals as will be seen later
- G. Use a standardized naming system for future debugging and Sensor monitoring as follows:
 - a. Block Name – Should be Module Name
 - b. Main Line Description –Inner Main = “IM”
 - c. Normal Train Traffic Flow – West = “W”
 - d. Track Segment Identity – “TS#”
 - i. “TS#” for intermediate track segments (numbers; ie. 1,2,3,4,etc)
 - ii. “ETS#” for the End track segments (next sequential number)
- H. Block Name Example
 - i. first intermediate track segment - Twin Peaks IMW TS1
 - ii. last track segment assuming a total of two intermediate segments - Twin Peaks IMW ETS3
- I. Continue with this naming convention for all remaining track segments defined on the module

3. Local Track(s)

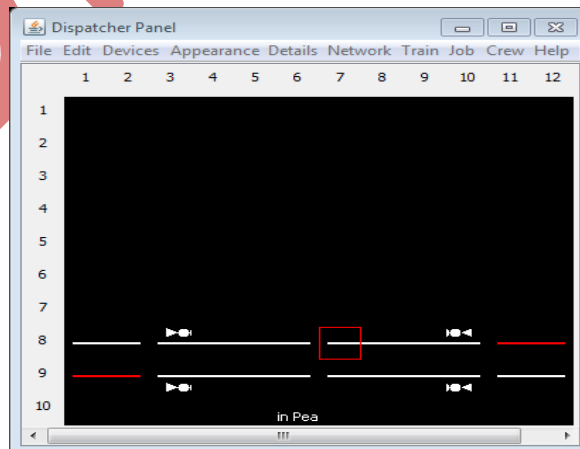
- A. Design assumes normal train traffic flow

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- a. outside local tracks is West to East
- b. Inside local tracks is East to West
- B. Each Block, whether it be signal or power, defined or undefined, is referred to as a Track Segment
- C. First Track Segment when at the edge of the module and can be connected to track on an adjacent module must be "Defined" by "Naming the Block"; and selecting "ABS". It is an end track segment and its name should refer to it as End Track Segment 0
 - a. Activity displayed in CATS is driven from the adjacent module
 - b. Will display in "Designer" as a "Gray Line"
 - c. Will display in CATS when loaded as a stand-alone file
- D. The next Track Segment will be referred to as Track Segment 1 and each subsequent segment will increment by one digit.
- E. Define the track segment using a unique name
 - a. Naming convention is critical as no two track segments can have the same name
 - b. Across the ENTIRE module setup each track segment MUST have a unique name
 - c. Also helpful in debugging occupancy and signals as will be seen later
- F. Use a standardized naming system for future debugging and Sensor monitoring as follows:
 - a. Block Name – Should be Module Name
 - b. Description – Local Outside = "LO"; Local Inside = "LI"; 2nd Local Inside = "LII"
 - c. Track Segment Identity – "TS#" for all local track should be left to right (1,2,3, etc.)
 - d. Block Name Example
 - i. Outside Local track "Twin Peaks LO TS1"
 - ii. Inside Local Track "Twin Peaks LI TS1"
 - iii. When there are multiple local tracks, usually inside "Twin Peaks LII TS1"

V. DEFINING BLOCK BOUNDARIES

- A. Start Designer and open desired file (example is "Twin Peaks")
 - a. Select "File"
 - i. Select "Open"
 - b. Place cursor at Row 8, Column 7 and left click mouse (*red box appears*) (Figure V-1)



(Figure V-1)

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- B. Row 8 represents Inner Main and Row 9 represents Outer Main
 - e. Track Segment “0” on both rows are shown in “Red” and have “Undefined Block Boundaries”
 - f. Place the cursor on the left end of the block boundary to be defined
 - g. “Red Square” indicates the Track Segment which will be “Defined”
- C. Select “Details” in Figure V-1
 - a. Select “Track Ends” for the following screen

(Figure V-2)

- a. Dialogue box shown in Figure V-2 displays a check in the “Left” block boundary area which matches the cursor placement
- D. Select “Define Block” in the left segment for the following screen

(Figure V-3)

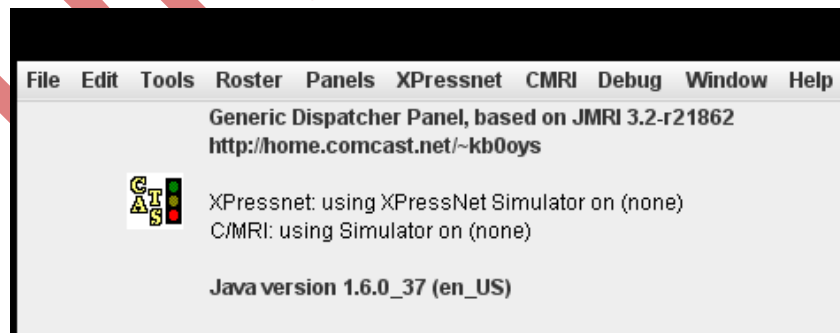
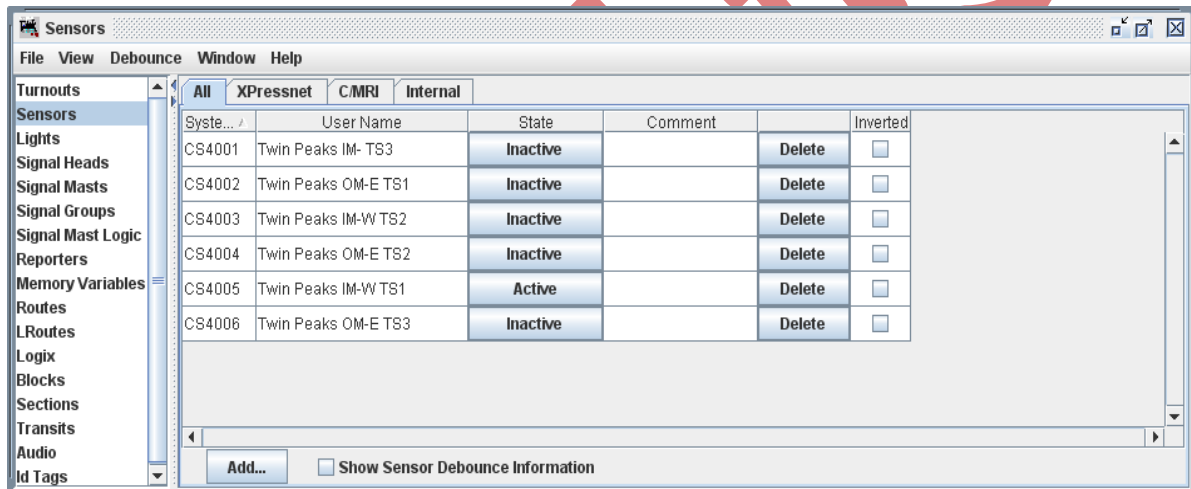
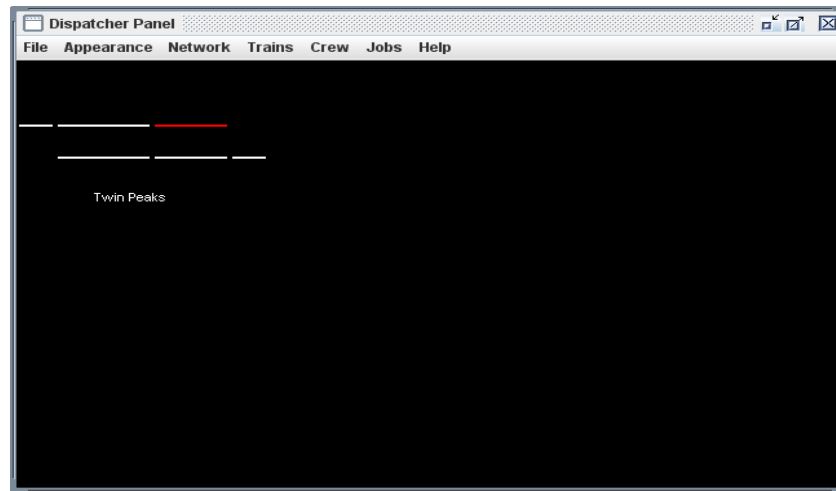
- b. First enter “Block Name” located at the top of Figure V-3. This is the unique identifier for this track segment located on this module. Use the naming conventions discussed previously under Block Naming Conventions

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- c. Second enter "Station". Can be left "blank" but suggestion is to use the module name. This will be discussed in more detail later, however, the quick explanation is CATS will report this name when asked where a train is located
 - d. Third select "Signal Discipline". This will be explained in more detail under "Signals". In this example "ABS" is selected, also leave "Show Block" box "checked"
 - e. Fourth "Track Occupancy Detection". In this section both the "Occupied Report" and the "Unoccupied Report" must be defined. This is the location where the actual hardware and software are connected.
 - f. Drop Down box provides three choices for the "Chubb" board HUB uses.
 - i. "CL" used when a panel lamp (not a signal aspect) is connected to the physical board location
 - ii. "CS" used when a sensor is connected to the physical board location
 - iii. "CT" used when a signal aspect is connected to the physical board location
 - iv. The "C" tells CATS it is a "Chubb" board
 - g. Address identifies the Board number and the pin location on the board where the device is physically connected. Since 128 Chubb boards are currently allowed this address can be up to six digits in length
 - i. Digit 1 up to three is the Board address assigned the module by the Coordinator
 - ii. The last three digits identifies the board pin to which the device is connected
 - iii. Figure 3 displays address "4005"; "4" = Board Number; "005" = physical board pin
 - h. "User Name" is used for debugging CATS and monitoring the "Track Sensor Table"
 - i. For consistency use the Track Segment Name. In Figure 3 "Twin Peaks IM-W TS1" is entered.
 - i. Finally select "Close" radio button to indicate active mode.
 - j. Complete the "Unoccupied Report" in the same manner except select the "Throw" radio button to indicate inactive mode.
- E. Select "Accept" button in both Figures 3 and 2
- F. One step remaining under "File" in Figure 1 select "Save As" to save this work before working on the next Track Segment shown in Figure 1.
- G. Repeat these steps for each track segment on the module.
- H. Once a Track Segment is defined it will display "White". Track segments given a name without further definition will display "Gray" telling CATS it is "dark" track.
- I. "Red" track segments are Undefined. On the Main Line tracks, Track Segments "0" should never be defined.
- J. For more details refer to Designer documentation provided with CATS. The filename is Designer.doc and information on defining blocks is found Section 9.1

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VI. Sensor Table



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VII. PARTIALLY EDITED BELOW

Other Track Rules

- All End segments should be set to the signal discipline of ABP-2
- All mainline track not within the boundaries of a CTC segment should be set to signal discipline APB-2
- All third track should be set to either signal discipline ABS or ABP-2
- Track speed on most Mainlines should be set to normal with signal discipline of APB-2. Other speeds are choice of the modeler but it would be common for the branching route on crossovers to be slower (e.g. either limited or medium). Track speed might also be lower in a congested area with a grade crossing. Note: This would be reflected in the signal aspects.

GENERAL RECOMMENDATIONS

1. Add turnout motors with DCC control to ALL turnouts that attach to either mainline. Turnouts that lead to sidings should obey this recommendation particularly if the track can be extended beyond the limits of the module where the turnout lies. The exception to this recommendation is turnouts that end on the same module with a fixed bumper. These represent true stub sidings. They could have turnout motors and obey locking rules but use of manual throws for this type of siding is acceptable.
2. Tortoise or Cobalt motors on mainline must be kept in synch between actual track position, physical control panels and CRT based dispatcher panel. All three must be in constant agreement.
 - a. This means DCC controllers must show N (for NCE and + for Lenz) when straight and R (for NCE and – for Lenz) when reversed.
 - b. The position of powered mainline turnouts must be accurately displayed on the dispatcher panel. The convention for this is as follows. Use one of the pair of SPDT switches that come with Tortoises and Cobalt turnout motors. Connect the center pole to signal ground (the green pole on the harness). It will be the sensor. One of the other two contacts forms the circuit. *Select the contact that is closed when the turnout is in the straight position* and connect that wire to any open input pin on a Chubb board.
 - c. In CATS Designer when the switch points are being defined, the address used in Route Selected Report should be in the Thrown position. When in the reversed position it should be set to the Closed position.
3. Do not add detection to final track segment on Local Tracks on either end of a module. The Local track is not necessarily wired for detection. Thus module owners must not make any assumptions regarding the presence or detection status of Local tracks on adjacent modules.
4. Use G-Type Triangular signals as HUB standard
5. Tipple or Tipple West should always start a setup that is not linear. These modules contains track segments will all four speeds: normal, limited, medium and slow. By doing this the signal templates defined in Tipple or Tipple West modules will have all available signal rules/aspects available and they will be fully programmed. Thus, this is the module file that will contain the

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definitions for one, two and three headed G-Type triangular signals as well as the definitions for both searchlight and vertical position-light dwarfs.

CATS Files

- All blocks including the End segments on both ends of module must be at least 2 cells in length
- Signal placement
 - Left side facing right (LOWRIGHT)
 - Right side facing left (UPLEFT)
- NAMES:
 - Not required but can be used at the modelers discretion
 - Use upper and lower case
 - Place at Row 1 Column 6 position LOWCENT
- Rules for Merging an Active Module added on the right
 - Open the first module and adjust screen to show the entire module
 - Add a new column at the right (either by pulldown under Edit or CTRL-Y)
 - Place the cursor at the upper right hand corner of the CATS file
 - Choose IMPORT under the file menu and choose the active module to add
 - Once added
 - **Inside Merge:** Perform the merge on the rightmost track on the left Module. Select Details, Track ends and remove block checkmark on the “right.” After doing so the End segment on right hand (new) module will disappear. Check to sure the name of the block is “inherited” from left hand module.
 - **Outside Merge:** Perform the merge from the leftmost track on the right Module. This will be an End segment. Select Details, Track ends and remove block checkmark on the “left.” After doing so the End segment on right hand (new) module will disappear. Check to sure the name of the block is “inherited” from right hand module. That is the new longer block will be the name of OuterMain West End segment.
- Rules for merging a passive module
 - Add a new column at the right (either by pulldown under edit or CTRL-Y)
 - Place the cursor at the upper right hand corner of the CATS file
 - Choose IMPORT under the file menu and choose the passive module to add
 - Once added
 - The inner and outer main tracks should appear red as they have no names. Third track trackage should be grey or white depending on whether it is detected.
 - Merge: Perform the merge on both new tracks from the rightmost track on the left Module. Select Details, Track ends and remove block checkmark on the “right.” After doing so the End segment will grow to include the passive module. Check to sure the name of the block is “inherited” from left hand module (i.e. it has the name of the End segment from the module to the left).
- Rules for “linking” the west and east ends of the track
 - This is the final step after importing all modules

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- In Designer, the track segment at the East end of the Inner Main and the track segment at the West end of the Outer Main will both be “red.” (e.g. undefined). The West end of the Inner Main should be white (not gray). The East end of the Outer Main should be white (not grey) If these criteria are not the case, the layout is not ready for linking the two ends.
- Inner Main Linking.
 - 1. Determine the row/column location of the west most track on the inner main.
 - 2. Place the cursor at the row 1, column 8 which will always be the start point on the inner main.
 - 3. Open the Details -> TrackEnds dropdown
 - 4. In the “Specify the Edges” Dialog box, make do the following to the “Left” boundary: Uncheck the both the Block Boundary Left and the Joins to Adjacent Track checkboxes. Place the Row/Column of the east most track in the row column fields. Note: the row will always be 8. For edge choose “RIGHT” then choose accept.
 - 5. The result of accepting is that previously red track at the east end of the inner main will now be bright white (e.g. defined with occupancy).
 - 6. Perform a save operation
- Outer Main Linking
 - 1. The location of east most track on the outer main will be row 9, column 1.
 - 2. Place the cursor at the west most track cell on the outer main.
 - 3. Open the Details -> TrackEnds dropdown
 - 4. In the “Specify the Edges” Dialog box, make do the following to the “Right” boundary: Uncheck the both the Block Boundary Right and the Joins to Adjacent Track checkboxes. Place the Row 1 and Column 9 in the row/column fields. For edge choose “Left” then choose accept.
 - 5. The result of accepting is that previously red track at the west end of the outer main will now be bright white (e.g. defined with occupancy).
 - 6. Perform a save operation
- Testing the result
 - 1. For each end that was linked place the cursor on the opposite end. Open the Track ends dialog box and prove that the row column location are correct. If this has been done wrongly, the row/column numbers will not reflect the opposite end and if the incorrect edge was selected, a “dot” may appear in linked track segment
 - 2. Exit Designer and load CATS. Load Crew and Trains and place a train on the inner main. Click PgDn to turn the train symbol from gold to blue and use the arrow on the keyboard to move the train westbound and showing that it does go around and around. Move the train with the mouse to outer main and use the keyboard to move the train eastbound showing that it, too, goes round and round.

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- Note that at present in order to load a CATS file that contains a crossover, at least one signal in each direction needs to be defined on each mainline. This will become a non-issue with the addition of the first active module with signals. If this is not done, the file will fail to load and the CATS screen appears black but will allow a loading an alternative CATS file, something that cannot be done if a successful load occurred. This is just a reminder for testing setups we have been using during the phase of refining detection.

BASE CATS Files

Three different CATS base files are available as starting points.

- HUB Simple Passive.xml: This is a file with only two mainline tracks and neither is detected
- HUB 3Track Passive.xml: This is a file with two mainline tracks and a third track defined with no detection
- HUB Active.xml: This is a file with 2 mainline tracks with End segments, a third track undetected and full signal names defined. Discipline for the inner and outer main tracks default to ABP-2. This will need change if CTC is required in the module.

These files are to be used as starting points. They should be renamed appropriately for the module being used and must retain the .xml extension prior developing expanded definitions particular to each module. Note the outer main begins in row 9. This allows a track to outside of the inner main in row 10. Inner main begins in row 8. Third tracks track can be anywhere including crossings over the mainlines. In the definition files, mainline speed will be set to normal. Modelers can change this to meet the needs of their modules.

HUB Division Signal Names

The signal templates for triangular G-Type signals, vertical D-type signals and searchlight signals will be provided in both the Tipple and Tipple West files. These names can be used by modelers for adding signals without consideration of the aspects as they will be automatically inherited by either Tipple or Tipple West.

A modeler creating a new CATS file in designer for their own module can use the predefined devices provided in the base CATS file. If other specialized signals or aspects are needed, these can be defined by the modeler in their personal CATS definition files but must not conflict with the base file names

The list of predefined signals is:

G-type 1H	G-type triangular signal with one head
G-type 2H	G-type triangular signal with two heads
G-type 2H	G-type triangular signal with three heads
D-type 1H	D-type vertical signal with one head
D-type 2H	D-type vertical signal with two heads
D-type 2H	D-type vertical signal with three heads
Searchlight 1H	Searchlight signal with one head
Searchlight 2H	Searchlight signal with two heads
Searchlight 2H	Searchlight signal with three heads

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Note these signals will appear in the device list of a starting CATS base file. They can be use to place any of these 9 signal types anywhere on the panel. The actual definition of the aspects do not need to be dealt with is these signal types are used as they will be inherited from the HUB definitions contained in the first file loaded.

The list of predefined dwarf signals is:

D-type 1H Dwarf	D-type vertical dwarf signal with one head
D-type 2H Dwarf	D-type vertical dwarf signal with two heads
D-type 2H Dwarf	D-type vertical dwarf signal with three heads
Searchlight 1H Dwarf	Searchlight dwarf signal with one head
Searchlight 2H Dwarf	Searchlight dwarf signal with two heads
Searchlight 2H Dwarf	Searchlight dwarf signal with three heads

Note these signals will appear in the device list of a starting CATS base file. They can be use to place any of these 6 signal types anywhere on the panel. The actual definition of the aspects do not need to be done by the member as they will “inherit” the aspect definitions from base HUB Division file that contains these definitions. That should be all of the 4 corner modules. There is a strong reason to include Tipple as the first module for generation of CATS files for setups. It has enough third tracks to allow at least one segment of track to be defined for each of the 4 track speeds. This will allow all aspects that depend upon speed to be defined inside of Tipple. This won’t be the case for any of the other corner modules unless we set lower track speeds on one or more corner modules.

HUB Division Settings

Connections:

Lenz: LI-USB Ethernet (Primary connection to layout). Wireless connection to secure password protected Cisco Router. Supports CATS and WiThrottle.

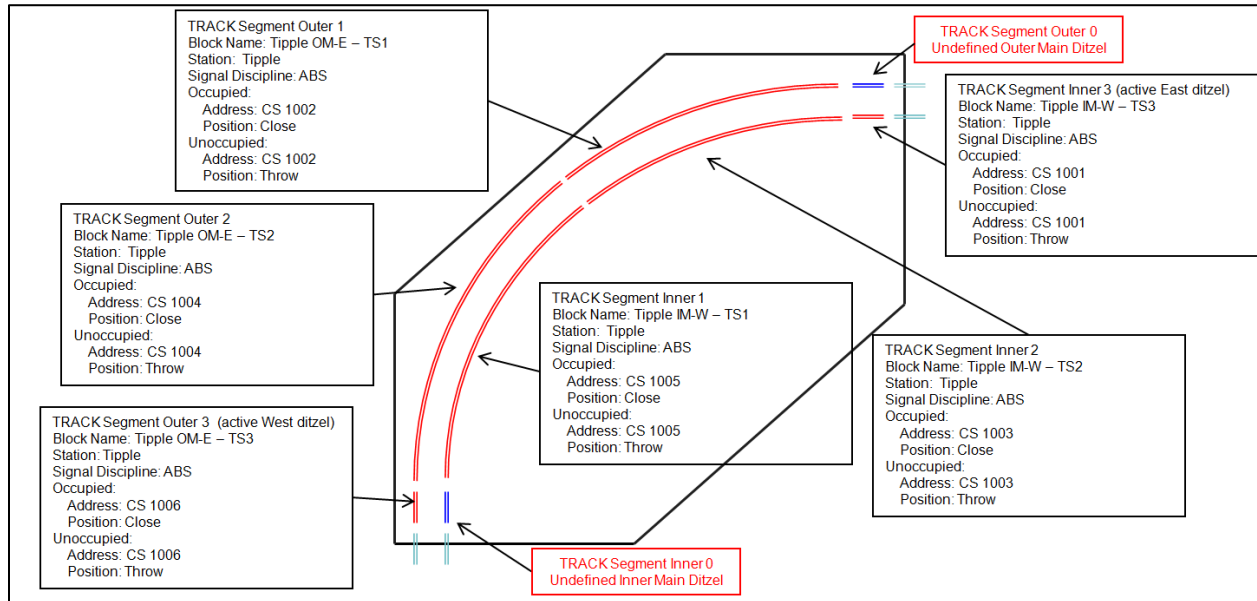
C/MRI: RS-232 to RS422: 57,600 Baud (CVOS uses 28,800). Supports CATS and WiThrottle

APPENDICES

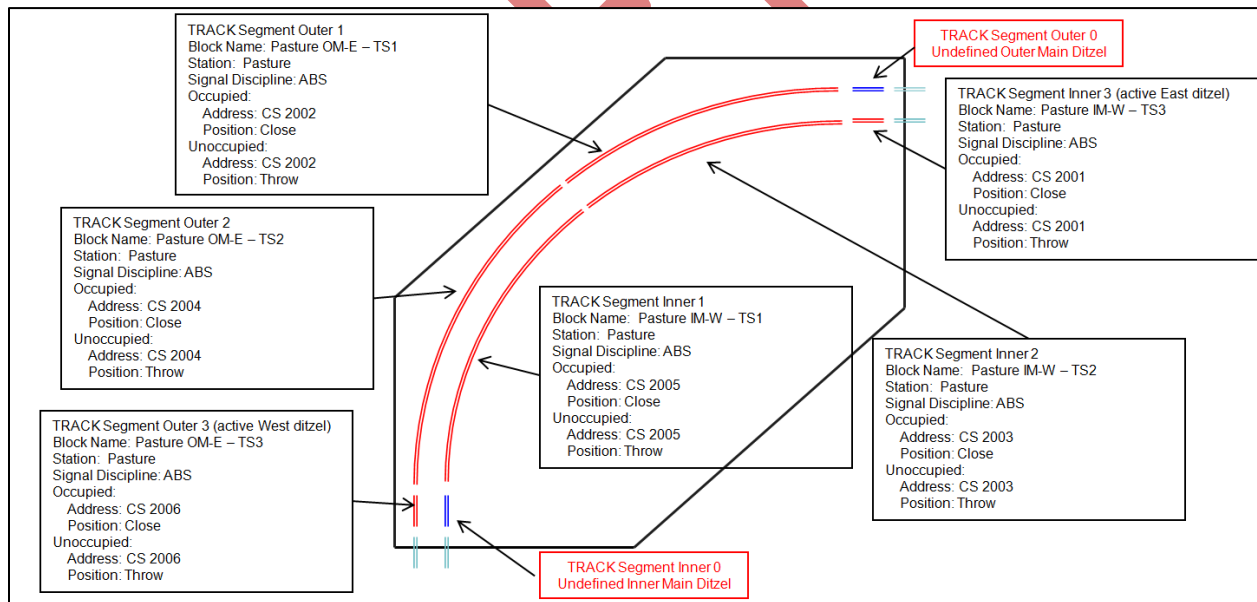
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Corner Module Definitions

Tipple: Chubb SMINI Address = 1

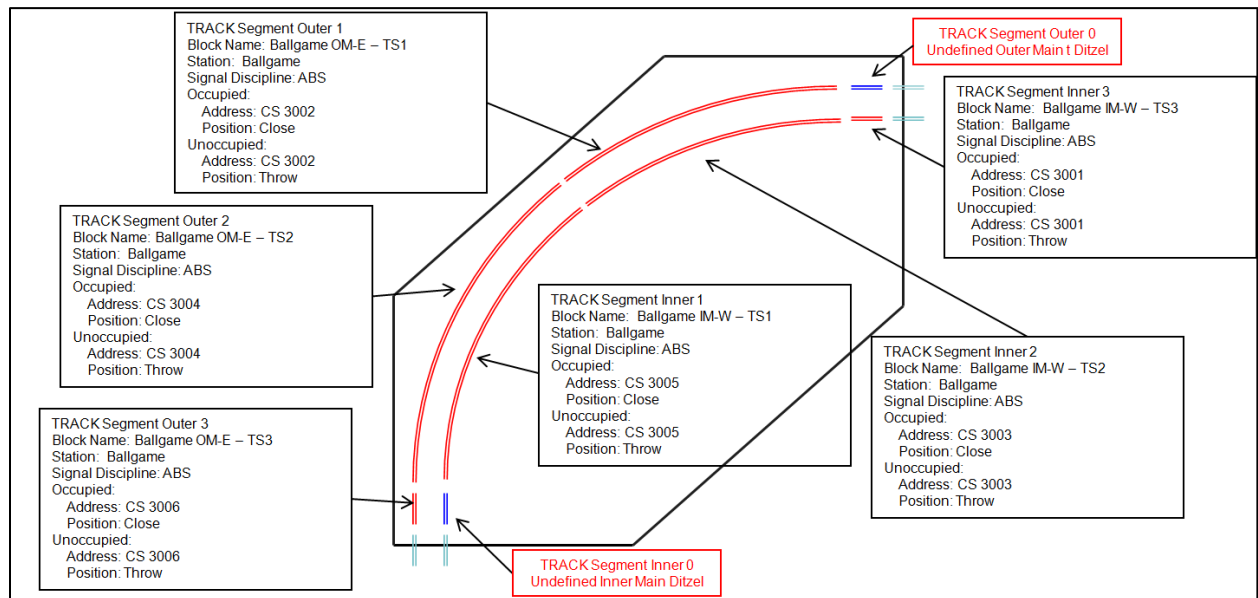


Pasture: Chubb SMINI Address = 2

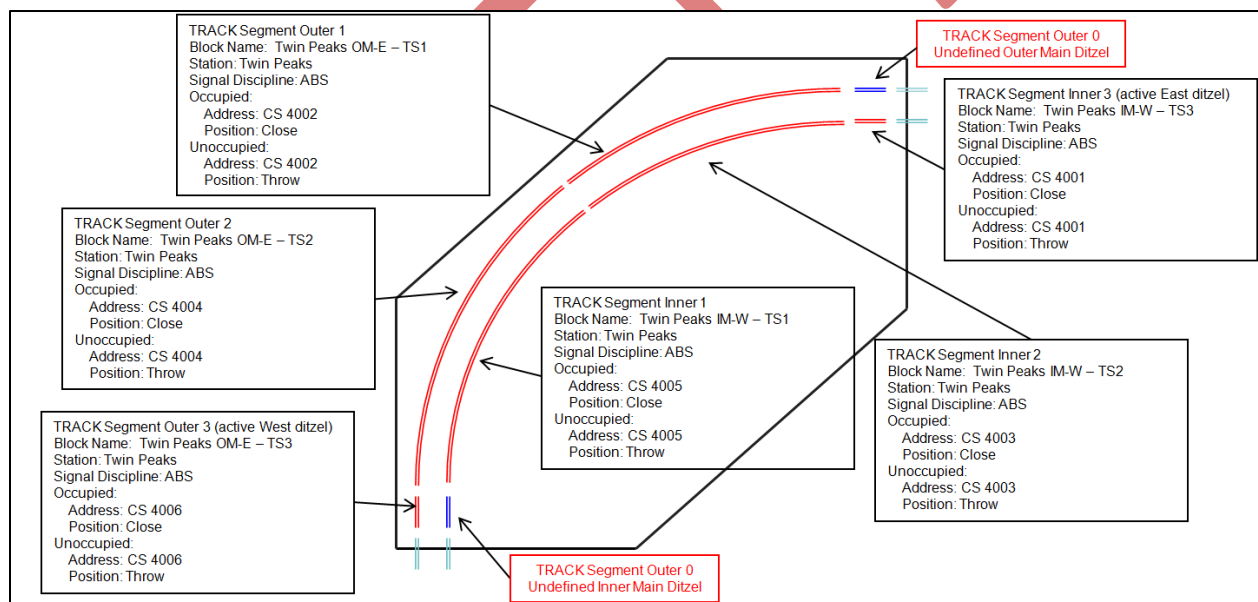


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Ballgame: Chubb SMINI Address = 3



Twin Peaks: Chubb SMINI Address = 4



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		Red	X001	X001				
		Yellow	X002	X002				
		Green	X003	X003				
		Red	X004	X004				
		Yellow	X005	X005				
		Green	X006	X006				
		Red		X007				
		Yellow		X008				
		Green		X009				
		Red	X007	X010				
		Yellow	X008	X011				
		Green	X009	X012				
		Red	X010	X013				
		Yellow	X011	X014				
		Green	X012	X015				
		Red		X016				
		Yellow		X017				
		Green		X018				

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Upton Yard Signal Program file East Module Signal Block Definitions

Block Definition			Actual Signal Location on Module	Define Signal		Details/Signal Head Definitions						
Block Name	Signal Discipline	Address "CS"		Panel Placement		Actual Head	Details	Aspect	Address "CT"			
				In Tile	Facing							
Upton Yard OME TS2	CTC	7004	Outer Main	Upleft	Left	Top	Head0	Red	7001	Software Flashing		
								Yellow	7002			
								Green	7003			
								Middle	Head1		Red	7004
									Yellow		7005	
									Green		7006	
								Bottom	Head2		Red	7007
									Yellow		7008	
									Green		7009	
Upton Yard IMW TS1	CTC	7001	Inner Main	Upleft	Left	Top	Head0	Red	7011	Software Flashing		
								Yellow	7012			
								Green	7013			
								Middle	Head1		Red	7014
									Yellow		7015	
									Green		7016	
								Bottom	Head2		Red	7017
									Yellow		7018	
									Green		7019	
Upton Yard LE TS1	CTC	7011	Local	Upleft	Left	Top	Head0	Red	7021	Software Flashing		
								Yellow	7022			
								Green	7023			
								Middle	Head1		Red	7024
									Yellow		7025	
									Green		7026	
Upton Yard EYL TS3a	CTC	7010	Yard Exit	Rightlow	Bottom	Top	Head0	Red	7027	Software Flashing		
								Yellow	7028			
								Green	7029			
								Middle	Head1		Red	7030
									Yellow		7031	
									Green		7032	
								Bottom	Head2		Red	7033
									Yellow		7034	
									Green		7035	

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Upton Yard Signal Program file West Module Signal Block Definitions

Define Block			Actual Signal Location on Module	Define Signal		Details/Signal Head Definitions										
Block Name	Signal Discipline	Address "CS"		Panel Placement		Actual Head	Details	Aspect	Address "CT"							
				In Tile	Facing											
Upton Yard OME TS1	CTC	8002	Outer Main	Upleft	Left	Top	Head0	Red	8001	Software Flashing						
								Yellow	8002							
								Green	8003							
								Middle	Head1		Red	8004				
															Yellow	8005
															Green	8006
															Bottom	Head2
															Yellow	8008
															Green	8009
Upton Yard IMW TS1	CTC	8003	Inner Main	Upleft	Left	Top	Head0	Red	8011	Software Flashing						
								Yellow	8012							
								Green	8013							
								Middle	Head1		Red	8014				
															Yellow	8015
															Green	8016
															Bottom	Head2
															Yellow	8018
															Green	8019
Upton Yard LE TS1	CTC	8011	Local	Upleft	Left	Top	Head0	Red	8021	Software Flashing						
								Yellow	8022							
								Green	8023							
								Middle	Head1		Red	8024				
															Yellow	8025
															Green	8026
Upton Yard EYL TS3a	CTC	8010	Yard Exit	Rightlow	Bottom	Top	Head0	Red	8027	Software Flashing						
								Yellow	8028							
								Green	8029							
								Middle	Head1		Red	8030				
															Yellow	8031
															Green	8032
															Bottom	Head2
															Yellow	8034
Green	8035															

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Draw Bridge Signal Program file East Module Signal Block Definitions

Define Block			Actual Signal Location on Module	Define Signal		Details/Signal Head Definitions														
Block Name	Signal Discipline	Address "CS"		Panel Placement		Actual Head	Details	Aspect	Address "CT"	Bridge Cable										
				In Tile	Facing					Pin	Wire Pairs									
Draw Bridge IMW TS1	CTC	6002	Inner Main	Upright	Left	Top	Head0	Red	6025	26	Blue	BR	Software Flashing							
								Yellow	6026	8		R								
								Green	6027	27		Y								
								Middle	Head1	Red	6028	9		W						
															Yellow	6029	28	BL		
															Green	6030	10	Y		
													Bottom		Head2	Red	6031	29	BK	
													Yellow		6032	11	R			
Green	6033	30	BK																	
Draw Bridge OME TS1	CTC	6001	Outer Main	Upright	Left	Top	Head0	Red	6034	12	Red	BL	Software Flashing							
								Yellow	6035	31		BK								
								Green	6036	32		BK								
								Middle	Head1	Red		6037		13	O					
																Yellow	6038	33	BK	
																Green	6039	14	G	
													Bottom			Head2	Red	6040	34	BK
													Yellow			6041	15	BR		
Green	6042	16	R																	
Draw Bridge LE TS1	CTC	6005	Local	Upright	Left	Top	Head0	Red	6043	35		Y	Software Flashing							
								Yellow	6044	17	R									
								Green	6045	36	BR									
								Middle	Head1	Red	6046	37		BL						
								Yellow	6047	18	R									
								Green	6048	19	R									

General Notes for Signal Head Definitions

Starting with the "CT" (CT instruction in CATS turns on the signal aspect when using a CMR/I Board) Address as defined above, each aspect has a dialogue box with questions to be answered:

Select "Throw" in each box; Off Command checked in each box; Software flashing checked (where asked)
User Name – "module name" Track "IM/OM" side of Module "E/W" Head Tab # (0, 1, or 2)
Example: "Draw Bridge IME Head1"

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Draw Bridge Signal Program file West Module Signal Block Definitions

Define Block			Actual Signal Location on Module	Define Signal		Details/Signal Head Definitions								
Block Name	Signal Discipline	Address "CS"		Panel Placement		Actual Head	Details	Aspect	Address "CT"					
				In Tile	Facing									
Draw Bridge IMW TS1	CTC	6002	Inner Main	Lowleft	Right	Top	Head0	Red	6001	Software Flashing				
								Yellow	6002					
								Green	6003					
								Middle	Head1		Red	6004		
													Yellow	6005
													Green	6006
													Bottom	Head2
													Yellow	6008
													Green	6009
Draw Bridge OME TS1	CTC	6001	Outer Main	Lowleft	Right	Top	Head0	Red	6010	Software Flashing				
								Yellow	6011					
								Green	6012					
								Middle	Head1		Red	6013		
													Yellow	6014
													Green	6015
													Bottom	Head2
													Yellow	6017
													Green	6018
Draw Bridge LW TS2	CTC	6006	Local	Lowleft	Right	Top	Head0	Red	6019	Software Flashing				
								Yellow	6020					
								Green	6021					
								Middle	Head1		Red	6022		
													Yellow	6023
													Green	6024

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Ball Game Module Program file Details Definitions

To Begin:

1. Create your module layout in “Designer” selecting “Details” then “Tracks”
2. Tracks above the local track are unnecessary as a Dispatcher is only concerned with viewing tracks that can access the main line; “Control Points” (CP)’s
3. Track speed must be set using the dialogue box adjacent to the track you are laying: Pull down box choices: default; normal; limited; medium; slow

Define Block				Track Occupancy Detection							
Block Name	Station	Show Block	Signal Discipline	Occupied Report				Unoccupied Report			
				Board Mfg. ID	Board Address	User Name	Radial Button	Board Mfg. ID	Board Address	User Name	Radial Button
Ballgame IME TS1	Ball Game	Checked	ABP-2	CS	3002	Ballgame IME TS1	Close	CS	3002	Leave Blank	Thrown
Ballgame IME TS2	Ball Game	Checked	ABP-2	CS	3004	Ballgame IME TS2	Close	CS	3004	Leave Blank	Thrown
Ballgame IME ETS3	Ball Game	Checked	ABP-2	CS	3006	Ballgame IME ETS3	Close	CS	3006	Leave Blank	Thrown
Ballgame IMW TS1	Ball Game	Checked	ABP-2	CS	3005	Ballgame IMW TS1	Close	CS	3005	Leave Blank	Thrown
Ballgame IMWTS2	Ball Game	Checked	ABP-2	CS	3003	Ballgame IMW TS2	Close	CS	3003	Leave Blank	Thrown
Ballgame IMW ETS3	Ball Game	Checked	ABP-2	CS	3001	Ballgame IMW ETS3	Close	CS	3001	Leave Blank	Thrown

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Ball Game Signal Program file Signal Block Definitions

Define Block			Actual Signal Location on Module	Define Signal		Details/Signal Head Definitions				
Block Name	Signal Discipline	Address "CS"		Panel Placement		Actual Head	Details	Aspect	Address "CT"	
				In Tile	Facing					
Ballgame IMW TS1	ABP-2	3005	Inner Main East side of Module	Upright	Left	Top	Head0	Red	3001	Software Flashing
								Yellow	3002	
								Green	3003	
						Bottom	Head1	Red	3004	
								Yellow	3005	
								Green	3006	
Ballgame OME TS2	ABP-2	3004	Outer Main East side of Module	Lowright	Left	Top	Head0	Red	3007	Software Flashing
								Yellow	3008	
								Green	3009	
						Bottom	Head1	Red	3010	
								Yellow	3011	
								Green	3012	
Ballgame IMW TS2	ABP-2	3003	Inner Main West side of Module	Upleft	Right	Top	Head0	Red	3013	Software Flashing
								Yellow	3014	
								Green	3015	
						Bottom	Head1	Red	3016	
								Yellow	3017	
								Green	3018	
Ballgame OME TS1	ABP-2	3002	Outer Main West side of Module	Lowleft	Right	Top	Head0	Red	3019	Software Flashing
								Yellow	3020	
								Green	3021	
						Bottom	Head1	Red	3022	
								Yellow	3023	
								Green	3024	

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Twin Peaks Signal Program file Signal Block Definitions

Define Block			Actual Signal Location on Module	Define Signal		Details/Signal Head Definitions					
Block Name	Signal Discipline	Address "CS"		Panel Placement		Actual Head	Details	Aspect	Address "CT"		
				In Tile	Facing						
Twin Peaks IMW TS1	ABP-2	4005	Inner Main East side of Module	Upright	Left	Top	Head0	Red	4001	Software Flashing	
								Yellow	4002		
							Bottom	Head1	Red		4004
									Yellow		4005
									Green		4006
Twin Peaks OME TS2	ABP-2	4004	Outer Main East side of Module	Lowright	Left	Top	Head0	Red	4007	Software Flashing	
								Yellow	4008		
								Green	4009		
							Bottom	Head1	Red		4010
									Yellow		4011
									Green		4012
Twin Peaks IMW TS2	ABP-2	4003	Inner Main West side of Module	Upleft	Right	Top	Head0	Red	4013	Software Flashing	
								Yellow	4014		
								Green	4015		
							Bottom	Head1	Red		4016
									Yellow		4017
									Green		4018
Twin Peaks OME TS1	ABP-2	4002	Outer Main West side of Module	Lowleft	Right	Top	Head0	Red	4019	Software Flashing	
								Yellow	4020		
								Green	4021		
							Bottom	Head1	Red		4022
									Yellow		4023
									Green		4024

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Farm Signal Program file Signal Block Definitions

Define Block			Actual Signal Location on Module	Define Signal		Details/Signal Head Definitions					
Block Name	Signal Discipline	Address "CS"		Panel Placement		Actual Head	Details	Aspect	Address "CT"		
				In Tile	Facing						
Farm IMW TS1	ABP-2	2005	Inner Main East side of Module	Upright	Left	Top	Head0	Red	2001	Software Flashing	
								Yellow	2002		
							Bottom	Head1	Red		2003
									Yellow		2004
									Yellow		2005
									Green		2006
Farm OME TS2	ABP-2	2004	Outer Main East side of Module	Lowright	Left	Top	Head0	Red	2007	Software Flashing	
								Yellow	2008		
								Green	2009		
							Bottom	Head1	Red		2010
									Yellow		2011
									Green		2012
Farm IMW TS2	ABP-2	2003	Inner Main West side of Module	Upleft	Right	Top	Head0	Red	2013	Software Flashing	
								Yellow	2014		
								Green	2015		
							Bottom	Head1	Red		2016
									Yellow		2017
									Green		2018
Farm OME TS1	ABP-2	2002	Outer Main West side of Module	Lowleft	Right	Top	Head0	Red	2019	Software Flashing	
								Yellow	2020		
								Green	2021		
							Bottom	Head1	Red		2022
									Yellow		2023
									Green		2024