



Understanding Dispatch Logic in the Initial Response Simulation (IRS) Module IRS_017_WP

Topic:

Dispatch Logic in the Initial Response Simulation (IRS) module.

Purpose

This paper describes how the Initial Response Simulation module (IRS) combines Fire Dispatch Level (FDL) and resource assignment data to define resource response to fire events into Dispatch Logic.

Terms

Fire Dispatch Level: In the IRS module, a 3, 4, or 5-level system of fire danger assessment used to define the maximum number by type of resources that can be dispatched to a Fire Workload Area (FWA) when a fire occurs within that FWA. Fire Dispatch Levels (FDL) are set using either the National Fire Danger Rating System (NFDRS) Energy Release Component (ERC) or Burning Index (BI).

Dispatch Logic: User-defined settings by FDL to represent the maximum number and type of resources sent to ignitions in the Initial Response Simulation (IRS) module.

Background

The Initial Response Simulation (IRS) module requires Fire Planning Units (FPUs) to enter FDL, breakpoint, and Dispatch Logic data in order to model the number and types of fire resources to be used in containment simulation of each fire event within a Fire Workload Area (FWA).

- **Fire Dispatch Level (FDL):** These data are analogous to NFDRS climatic breakpoints used for fire business thresholds in Fire Danger Rating Operating plans. Fire Planners enter the FDL and breakpoint for each FWA into FPA.
- **Dispatch Logic:** Based on the FDL and breakpoint data, Fire Planners enter Dispatch Logic information; the quantity and type of initial response fire resources for each FDL/breakpoint within an FWA.

Discussion

Fire Dispatch Levels are defined using a minimum of three or a maximum of five Fire Dispatch Levels. The five levels are: 1 = Low; 2 = Moderate; 3 = High; 4 = Very High; and 5 = Extreme.

Once the number of FDLs has been set for each FWA, Fire Planners enter breakpoint values defining the upper limit for each FDL so the simulation has the fire danger index range for that value. Each fire has an Energy Release Component (ERC) and a Burning Index (BI) calculated for it. Fire Planners select either ERC or BI as the NFDRS index for that FWA's FDL. The



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breakpoint values per FDL allow simulated fires to be binned into the appropriate FDL based upon the selection of ERC or BI. Regardless of the number of FDLs selected, FPA always populates the final FDL column with MAX to represent the highest calculated value.

FPU Planners identify in Dispatch Logic the desired quantity of Producer Types for dispatch to a fire event occurring at each of the Fire Dispatch Levels (see [Figure 1](#) for an example of a Dispatch Logic input screen). When enough resources are not available to fulfill the desired quantity of Producer Types for a fire event dispatch, the model will use as many as are available within those Producer Types. IRS utilizes the resource within a Producer Type with the shortest arrival time if more than the desired number is available for dispatch to an FWA. When the Producer Types with the shortest Arrival Time are already committed to another fire event, IRS automatically searches for the specified resource and selects the resource from the Dispatch Location with the next shortest Arrival Time. FPA allows using a Dispatch Logic definition for one or more FWAs.

Fire Planners may refer to their Fire Management Plans and/or associated plans (Fire Danger Operating Plans, Dispatch Pre-Attack Plans, or computer aided dispatch tools) for additional guidance on selecting appropriate Dispatch Logic data for each FWA.

Dispatch Logic table name

NFDRS Index

Number of Fire Dispatch Level Breakpoints

Table Name: Primary Index: BI Levels: 5
Description: This is my primary disp. Logic table.

Type	Low	Moderate	High	Very High	Extreme
Breakpoint	12	22	33	48	(Max)
ATT			1	2	2
CRW			2		
DZR1					
DZR2			2	2	4
DZR3			1	1	2
ENG1	2	3	4	5	6
ENG3			1	2	3
ENG5	1	1	2	4	4

Producer Type pull-down list

Number of Resources needed

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Figure 1: Example of a Dispatch Location Input Screen



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Review History:

Date	Initials	Change Summary
February 22, 2008	KSH	Revisions completed.
February 20, 2008	LB/BE	Reviewed edits and updated.
February 7, 2008	KSH	Edited draft.
February 6, 2008	HR	Reviewed draft and approved.
February 1, 2008	BE/MA	Second Draft.
January 28, 2008	HR	Initial Draft.