Energy Release Component Graphs and What They Show

The ***Statistical Bars*** graph displays the mean, mean ± one standard deviation, minimum and maximum values, and the first critical percentile for each time period. Values that are above or below average - yet fall within the ± one standard deviation bars - are considered to be within a normal range. Values above the one standard deviation bars are considered to be beyond "average worst" conditions. The model used to generate the index (if any) is displayed in the lower right hand corner, along with the number of weather observations used.

Energy Release Component - (ERC)**: The Energy Release Component is a number related to the available energy (BTU) per unit area (square foot) within the flaming front at the head of a fire.** Daily variations in ERC are due to changes in moisture content of the various fuels present, both live and dead. Since this number represents the potential "heat release" per unit area in the flaming zone, it can provide guidance to several important fire activities. It may also be considered a composite fuel moisture value as it reflects the contribution that all live and dead fuels have to potential fire intensity. The ERC is a cumulative or "build- up" type of index. As live fuels cure and dead fuels dry, the ERC values get higher thus providing a good reflection of drought conditions. The scale is open-ended or unlimited and, as with other NFDRScomponents, is relative. Conditions producing an ERC value of 24 represent a potential heat release twice that of conditions resulting in an ERC value of 12.As a reflection of its composite fuel moisture nature, the ERC becomes a relatively stable evaluation tool for planning decisions that might need to be made 24 to 72 hours ahead of unexpected fire decision or action. Since wind and slope do not enter into the ERC calculation, the daily variation will be relatively small. The 1000-hr time lag fuel moisture (TLFM) is a primary entry into the ERC calculation through its effect on both living and dead fuel moisture inputs.

Burning Index (BI)**: The Burning Index is a number related to the contribution of fire behavior to the effort of containing a fire.** The BI (difficulty of control) is derived from a combination of Spread Component (how fast it will spread) and Energy Release Component (how much energy will be produced). In this way, it is related to flame length, which, in the Fire Behavior Prediction System, is based on rate of spread and heat per unit area. However, because of differences in the calculations for BI and flame length, they are not the same. The BI is an index that rates fire danger related to potential flame length over a fire danger rating area. The fire behavior prediction system produces flame length predictions for a specific location (Andrews, 1986).The BI is expressed as a numeric value related to potential flame length in feet multiplied by 10. The scale is open-ended which allows the range of numbers to adequately define fire problems, even during low to moderate fire danger.

It is important to remember that a computed BI value is an index representing the near upper limit to be expected on the rating area. In other words, if a fire occurs in the worst fuel, weather and topography conditions somewhere in the rating area, these numbers represent the potential fire line intensity and flame length. These conditions are not expected throughout the entire fire danger rating area at any one time or under less severe conditions.