Design requirements for UEWS alarm enable logic

Input: RSDF input every 2 seconds

* First line is HS – this will be used for timestamps
  + First 6 numbers are dd/mm/yy /h/m/s accordingly
* Second line is PP – this will be used for location tracking
  + First 3 numbers are X/y/z coordinates
  + Last 2 numbers are heading (degrees off y-centerline) and knots (used to be total, but now only x/y plane?) These numbers are already averaged before they are sent in. I believe averaged over the past 10 numbers

Output: Alarm enable signal and Transmit Alarm

* Alarm enable goes to control panel
* transmit alarm goes directly to the speakers (separate program?)

Alarm Enable Logic:

Alarm processor runs independently of the rest of the program so that it can have timers that don’t get held up by other processes.

* Case 0: No Data
  + Classify data into 3 catagories: none, PP, Code 11
  + Alarm handler will have a timer set to a *seconds* variable that can config
    - That timer gets reset every time a PP or Code 11 is seen
    - Once timer runs out, alarm enable
  + Alarm handler also has *R value* that gets calculated and set every time there is a Code 11
    - The timer resets every time a Code 11 is seen
    - Once the timer runs out, alarm enable
* Case 1: Check Valid (Outlier in X,Y,Z, Knots )
  + - Needs 5 concurrent occurrences for Position
    - Not calculating projected position
  + 2500 < x < 15560 yards
  + -220 < y < 2200 yards
  + 25 < z < -600 feet (this is redundant because of case 3…)
  + Knots < 40
* Case 2: Check Boundary (X,Y and Depth according to the 3 boarder zones )
  + - Needs 5 concurrent occurrences for Position
  + See border zone diagram
  + Inner boundary: -220 < z <-165
  + Middle Boundary: -165 < z , -75
  + Outer Boundary: -75 < z < 0
* Case 3: Check Boundary Predicted
  + Same as before but with predicted position value

Other requirements?:

* Must take in data every 2 seconds
* Must output alarm enable signal, while still running and calculating
* Must turn off alarm enable signal, while still running and calculating

Random notes:

* Incoming data is in feet
* Boundaries are listed in yards (should probably changes all these to feet if possible (map?)