**update\_edl\_state**

***Calling Syntax***

[edl\_system, y0, TERMINATE\_SIM] = update\_edl\_state(edl\_system,TE,YE,IE,Y,ITER\_INFO)

***Description***

The function update\_edl\_state updates various fields within the EDL system struct based on the occurrence of simulation events, which includes: 1) heat shield ejection 2) parachute ejection 3) turning on rockets for powered descent 4) activating sky crane to lower the rover 5) touching down on Mars surface 6) reaching low enough altitude to initiate positional control 7) reaching speeds for which speed control is required 8) running out of fuel 9) EDL crashing before sky crane is activated. This function also updates the rocket mass as fuel is burned while proceeding through mission events.

***Input Arguments***

edl\_system struct Data structure containing EDL system definition

TE vector Vector from ode113 indicating time elapsed

YE array Array from ode113 which includes positional EDL rover

dynamics

IE vector Vector from ode113 identifying each mission event

Y array A Nx7 array of simulation results containing EDL velocity,

acceleration, current fuel mass, accumulated error, and

positional rover dynamics relative to the sky crane.

ITER\_INFO input Optional Flag that displays detailed iteration information if

called

***Output Arguments***

edl\_system struct Data structure containing EDL system definition, XXX

y0 array Array of initial conditions that were calculated to be the starting

points of each simulation event

TERMINATE\_SIM output Outputs terminating condition for when the simulation can no

longer proceed, either due to landing successfully or by failing

during a certain event and crashing and burning