1023-49-1371   **Randal E. Hickman*** (`ar2000@usma.edu`). *Applications of Dynamic Programming in a Network of Autonomous Vehicles and Sensors.* Preliminary report.

In recent years, we have seen a vast increase in the existence of autonomous, "intelligent" vehicles. These unmanned systems perform a myriad of complicated tasks, ranging from industrial functions to military applications. This presentation considers a problem where several autonomous vehicles work cooperatively with each other in conjunction with a network of sensors. The assignment given to the autonomous vehicles is to intercept a variety of stochastically moving objects over a large area of interest. The sensors provide information to the autonomous vehicles as they pursue and intercept the objects of interest. Dynamic programming is successfully employed to optimize the initial locations of the autonomous, chaser vehicles within the sensor array. The author also proposes a dynamic programming formulation for the control algorithm on each chaser vehicle, using the principles of imperfect state information and certainty equivalent control. (Received September 25, 2006)