The example here assumes the monitoring task is performed by an aerial surveillance system using a SAR.[16] Airborne remote sensing for conventional arms control verification has received special attention in recent months, as evident in President Bush's "open skies" proposal. These systems possess many operational and political advantages over satellite systems especially relevant to CFE verification. Operationally, the flight frequency, profile, routing and coverage of fixed-wing aircraft can be easily changed; short-notice inspections can be conducted throughout the coverage area; observer teams can be transported without losing surveillance capability; sensors can be quickly repaired or replaced; and, life-cycle costs are lower than those for satellite systems.[17] Politically, aerial surveillance opens the verification process to all participants. Exclusive reliance on National Technical Means limits verification to those states with the technical and financial resources to maintain space-based surveillance systems; with airborne systems, the process becomes truly multilateral. With growing awareness of the advantages of aerial surveillance, it is instructive to examine the verification problem primarily in terms of these systems (as noted above, the model applies to satellite surveillance as well).

In the model, the following assumptions are made. The coverage area (from the NATO perspective) includes Eastern Europe and the western regions of the Soviet Union to the Ural mountains, an area of approximately six million km^2. An aerial survey of the entire region is completed every three months. One aircraft sortie covers 3 000 km at 7 620 m (25 000 ft.) in 9.3 hours with a radar (SAR) swath of 25 km.[18] Defining the verification problem in this manner, the research question is as follows:

> *How can one increase the likelihood that the aerial surveillance system will detect a treaty violation — unauthorized out-of-garrison unit(s) — in the coverage area at least once during a given interval length (assumed initially to be five days)?*

The values for the two variables in the model — the probability of detection [p(d)] and the number of "looks" [L] — are calculated based upon these assumptions. Initial calculations, representing the base case for the analysis, are presented in Table 2.

The overall detection probabilities are estimated substituting these values into the binomial model defined above; the results are found in the Appendix, Table A-1, and are presented graphically in Figure A-1. To reiterate, no practical significance should be attached to these estimates themselves; rather, attention should be given to the direction of the relationship between the overall probability of detection and the model variables and parameters.

From Figure A-1, the first relationship may be discerned: the probability of at least one detection increases with the probability of identification, given that the probability of observation remains constant. Recall, the probability of