APPENDIX A

EXPLANATORY COMMENTS

A1. Root Mean Square Error

The "root mean square" rms error is defined to be the square root of the average of the squared discrepancies. In this case, the discrepancies are the differences in coordinated or elevation values as derived from the map and as determined by an independent survey of higher accuracy (check survey). For example, the rms error in the X coordinate direction can be computed as:

$$rms = \sqrt{(D^2/n)}$$

where:
$$D^2 = d_1{}^2 + d_2{}^2 + \text{------------------} + d_n{}^2$$

d = discrepancy in the X coordinate direction = X_{map} - X_{check}

n = total number of points checked on the map in the X coordinate direction

A2. Well-defined Points

The term "well-defined points" pertains to features that can be sharply identified as discrete points. Points which are not well-defined (that is poorly-defined) are excluded from the map accuracy test. In the case of poorly-defined image points, these may be of features that do not have a well-defined center such as roads that intersect at shallow angles. [U.S. National Map Accuracy Standards, 1941]. In the case of poorly defined ground points, these may be such features as soil boundaries or timber boundaries. The selection of well-defined points is made through agreement by the contracting parties.

A3. Relationship to U. S. National Map Accuracy Standards

Planimetric accuracy in terms of the "limiting rms error" can be related to the United States National map Accuracy Standards (NMAS) provided the following assumptions are made: