

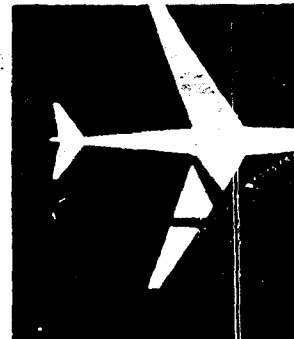
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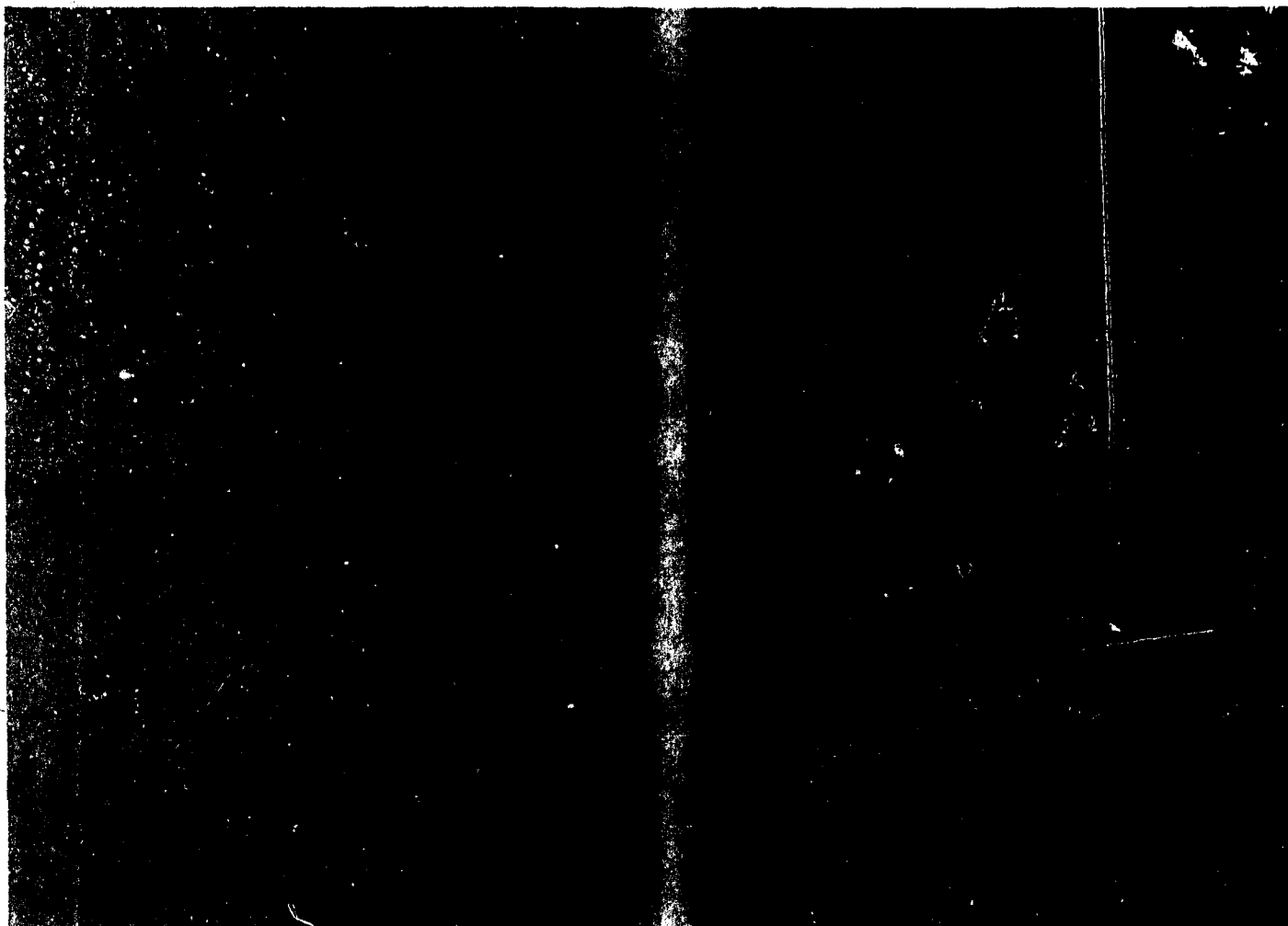
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SYSTEMS RESEARCH AND DEVELOPMENT SERVICE



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THE TRAVELERS RESEARCH CENTER INC.



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Supplementary Report
Technical Publication 23
Contract FAA/BRD-363

Supplement to
AN EVALUATION OF 2-7-hr
AVIATION TERMINAL-FORECASTING TECHNIQUES

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November 1962

Project 204-1

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*Contained in the main body [7].

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1.0 INTRODUCTION

The main body of this report [7] contains a description of the extensive procedure used to test and evaluate certain statistical terminal-weather forecasting techniques and a summary evaluation of the results. This supplement contains details of the test too lengthy for inclusion in the main part, some items of interest in themselves but of peripheral importance to the central purpose of the test, and a large number of contingency tables of forecast-vs-observed values.

The verification scores in the main evaluation [7] are the Brier-Allen P-score for probability forecasts and the Bryan score for categorical forecasts. Three other scores were computed to evaluate the categorical forecasts: the percentage of hits, the Heidke skill score, and the Vernon skill score. The computed scores and a brief analysis of them are given here in Section 2.0. Each of the three scores requires that weight functions be used to generate categorical forecasts from probability forecasts. The weight functions are given in Section 2.0 also. The weight functions used were designed to maximize the Bryan score [4, 7]. In response to an FAA request for suggestions, the Weather Bureau submitted a table of weight functions and requested additional evaluation. This work is documented in Appendix D.

Five statistical techniques were evaluated [7]: climatological expectancy of persistence, grouping, Lund, multiple-discriminant analysis, and Lewis. Some of the developmental work done on the first four techniques is presented in Section 3.0, along with a brief description of the Lewis technique.

One of the primary objectives of the test was to compare the accuracy of forecasts made by objective statistical techniques with subjective forecasts prepared on a routine operational basis. This required that the subjective forecasts be collected and decoded. Section 4.0 contains a description of the types of subjective forecasts evaluated and the manner in which they were decoded.

A by-product of the test is a set of IBM 7090 magnetic tapes containing standard hourly airway observations. Because these data may be useful in other work, a brief description of the tapes is given in Section 5.0.

Some problems of a general nature encountered in subjectively choosing predictor variables for developing statistical forecast methods are discussed in Section 6.0.

The predictors used to make forecasts by grouping, Lund, and multiple-discriminant analysis are listed in Appendix B.

All contingency tables of forecast-vs-observed values, more than 1000, that were computed in the test are given in Appendix C.

2.0 EVALUATION OF TEST FORECASTS

The Forecast Evaluation Working Group specified that the Bryan score would be the primary score for evaluating categorical forecasts; the main body of this report [7] contains such an evaluation. The Working Group requested that other scores be computed also. Three of the more commonly used scores for evaluating categorical forecasts are percentage of hits, Heidke skill score, and Vernon skill score. The three scores require that categorical forecasts be generated from probability forecasts. The method of generation utilizes "weight functions"; these are given in Section 2.1, with brief descriptions of the three scores. The scores were computed for categorical forecasts made with six forecast techniques on 42 predictands; these are given in Section 2.2, with a brief analysis.

2.1 Weight Functions for Generating Categorical Forecasts

The statistical techniques evaluated, except for the Lewis technique, produce probability forecasts only. To compare these forecasts with persistence, Lewis technique, and conventional subjective forecasts (which are in categorical form only), it is necessary to use the probability forecasts to generate categorical forecasts. The method for doing this is given by Eq. 2-4 of the main body [7], reproduced here:

$$G_1 = \sum_{j=1}^5 W_{1j} f_j, \quad G_2 = \sum_{j=1}^5 W_{2j} f_j, \quad \dots, \quad G_5 = \sum_{j=1}^5 W_{5j} f_j, \quad (2-1)$$

where the f_j 's ($j = 1, \dots, 5$) are the forecast probabilities. The maximum G gives the categorical forecast. Thus, if G_1 is largest, category 1 of the predictand is forecast; etc. The weight function, the W 's, are devised in such a way as to maximize the score being used to verify the categorical forecasts. Weight functions were computed for percentage of hits, Heidke skill score, and Vernon skill score.

All three scores are computed from a contingency table of forecast-vs-observed values. An example of such a table is Table 2-1. The notation in this table will be referred to in describing the methods for computing the three scores.

2.1.1 Percentage of Hits

A hit is a correct forecast of the observed category. The percentage of hits PH is the ratio of the sum of the entries on the main diagonal of Table 2-1 to the total number of forecasts:

$$PH = \frac{\sum_{i=1}^5 n_{ii}}{T} = \frac{R}{T}, \quad (2-2)$$

where R is the number of hits.

It is intuitively clear that forecasting the category with the highest probability will maximize the number of hits. The weight function that accomplishes this is given in

TABLE 2-1
SCHEMATIC FORECAST VERIFICATION TABLE*

		Observed					Total forecast
		1	2	3	4	5	
Forecast	1	n_{11}	n_{12}	n_{13}	n_{14}	n_{15}	r_1
	2	n_{21}	n_{22}	n_{23}	n_{24}	n_{25}	r_2
	3	n_{31}	n_{32}	n_{33}	n_{34}	n_{35}	r_3
	4	n_{41}	n_{42}	n_{43}	n_{44}	n_{45}	r_4
	5	n_{51}	n_{52}	n_{53}	n_{54}	n_{55}	r_5
Total observed		c_1	c_2	c_3	c_4	c_5	T

*The general entry, n_{ij} , is the number of times that the predictand was forecast in category i and observed in class j .

TABLE 2-2
WEIGHT FUNCTION
TO MAXIMIZE PERCENTAGE OF HITS

		j				
		1	2	3	4	5
i	1	1	0	0	0	0
	2	0	1	0	0	0
	3	0	0	1	0	0
	4	0	0	0	1	0
	5	0	0	0	0	1

Table 2-2. Using these weights to compute G's gives

$$G_1 = \sum_{j=1}^5 W_{1j} f_j = f_1, \quad G_2 = \sum_{j=1}^5 W_{2j} f_j = f_2, \quad \dots, \quad G_5 = \sum_{j=1}^5 W_{5j} f_j = f_5. \quad (2-3)$$

Thus, the G's and f's are identical.

It is of interest to note that the same weight function would be used to maximize the Appleman skill score [1]. This can be shown as follows. The Appleman score is

$$A = \frac{R - X}{T - X}, \quad (2-4)$$

where X is the number of cases in the most frequently observed category (the largest column sum in Table 2-1). In comparing two forecast techniques, the same observed cases are verified so that X is the same for the two techniques and so is T. The only quantity on the right side of Eq. (2-4) that varies is R, so A is proportional to R/T, which is PH.

2.1.2 Heidke Skill Score

The Heidke skill score [3] is

$$H = \frac{R - E}{T - E}, \quad (2-5)$$

where E is defined as the number of forecasts expected to be correct by climatology;

$$E = \sum_{i=1}^5 p_i c_i, \quad (2-6)$$

where p_i is the proportion of cases in class i, as measured on a long series of historical data, and c_i is the number of observed cases in category i.

The method for obtaining the weights to maximize the score was devised under this contract by Bryan [4]. There is one set of 25 weights for each predictand; these are shown in Table 2-3.

2.1.3 Vernon Skill Score

The version of the Vernon skill score [13] used in the evaluation is

$$V = \frac{\sum_{i=1}^5 \sum_{j=1}^5 r_{ij} d_{ij} - \sum_{i=1}^5 \sum_{j=1}^5 n_{ij} d_{ij}}{\sum_{i=1}^5 \sum_{j=1}^5 r_{ij} d_{ij}}, \quad (2-7)$$

TABLE 2-3
HEIDKE AND VERNON LOSS MATRICES

HEIDKE LOSS MATRIX

MCGUIRE AFB, WRIGHTSTOWN, N.J.

VERNON LOSS MATRIX

CEILING+2

0.44213	-0.00787	-0.00787	-0.00787	-0.00787	1.03015	0.03015	-0.96985	-1.96985	-2.96985
-0.01512	0.99488	-0.01512	-0.01512	-0.01512	-0.25259	0.74741	-0.25259	-1.25259	-2.25259
-0.03379	-0.03379	0.96621	-0.03379	-0.03379	-1.51310	-0.51310	0.48690	-0.51310	-1.51310
-0.05568	-0.05568	-0.05568	0.94432	-0.05568	-2.72393	-1.72393	-0.72393	0.27607	-0.72393
-0.28741	-0.28741	-0.28741	-0.28791	0.71209	-3.85290	-2.85290	-1.85290	-0.85290	0.14710

CEILING+4

0.98916	-0.01084	-0.01084	-0.01084	-0.01084	1.51226	0.51226	-0.48774	-1.48774	-2.48774
-0.02074	0.97926	-0.02074	-0.02074	-0.02074	0.09722	1.09722	0.09722	-0.90278	-1.90278
-0.04664	-0.04664	0.95336	-0.04664	-0.04664	-1.28534	-0.28534	0.71466	-0.28534	-1.28534
-0.07669	-0.07669	-0.07669	0.92331	-0.07669	-2.59484	-1.59484	-0.59484	0.40516	-0.59484
-0.39670	-0.39670	-0.39670	-0.39670	0.60330	-3.78421	-2.78421	-1.78421	-0.78421	0.21579

CEILING+6

0.98730	-0.01270	-0.01270	-0.01270	-0.01270	1.85041	0.85041	-0.13959	-1.13959	-2.13959
-0.02432	0.97568	-0.02432	-0.02432	-0.02432	0.34982	1.34982	0.34982	-0.65018	-1.65018
-0.05472	-0.05472	0.94528	-0.05472	-0.05472	-1.12081	-0.12081	0.87919	-0.12081	-1.12081
-0.08993	-0.08993	-0.08993	0.91007	-0.08993	-2.50157	-1.50157	-0.50157	0.49843	-0.50157
-0.46548	-0.46548	-0.46548	-0.46548	0.53452	-3.73462	-2.73462	-1.73462	-0.73462	0.26538

VISIBILITY+2

0.98995	-0.01005	-0.01005	-0.01005	-0.01005	1.22305	0.22305	-0.77695	-1.77695	-2.77695
-0.01126	0.98874	-0.01126	-0.01126	-0.01126	-0.10503	0.89497	-0.10503	-1.10503	-2.10503
-0.04155	-0.04155	0.95845	-0.04155	-0.04155	-1.41657	-0.41657	0.58343	-0.41657	-1.41657
-0.04482	-0.04482	-0.04482	0.95518	-0.04482	-2.66702	-1.66702	-0.66702	0.33298	-0.66702
-0.35875	-0.35875	-0.35875	-0.35875	0.64124	-3.85159	-2.85159	-1.85159	-0.85159	0.14841

VISIBILITY+4

0.9864	-0.01360	-0.01360	-0.01360	-0.01360	1.86346	0.86346	-0.13654	-1.13654	-2.13654
-0.01524	0.98476	-0.01524	-0.01524	-0.01524	0.36358	1.36358	0.36358	-0.63642	-1.63642
-0.05623	-0.05623	0.94377	-0.05623	-0.05623	-1.11178	-0.11178	0.88822	-0.11178	-1.11178
-0.06067	-0.06067	-0.06067	0.93933	-0.06067	-2.49269	-1.49269	-0.49269	0.50731	-0.49269
-0.48566	-0.48566	-0.48566	-0.48566	0.51434	-3.77392	-2.77392	-1.77392	-0.77392	0.22608

VISIBILITY+6

0.98441	-0.01559	-0.01559	-0.01559	-0.01559	2.28110	1.28110	0.28110	-0.71890	-1.71890
-0.01749	0.98251	-0.01749	-0.01749	-0.01749	0.66916	1.66916	0.66916	-0.33084	-1.33084
-0.06449	-0.06449	0.93551	-0.06449	-0.06449	-0.91188	-0.08812	1.08812	0.08812	-0.91188
-0.06959	-0.06959	-0.06959	0.93041	-0.06959	-2.37902	-1.37902	-0.37902	0.62098	-0.37902
-0.55690	-0.55690	-0.55690	-0.55690	0.44310	-3.72326	-2.72326	-1.72326	-0.72326	0.27674

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HEIDKE LOSS MATRIX

VERNON LOSS MATRIX

CEILING+2

0.99858	-0.00142	-0.00142	-0.00142	-0.00142	1.11979	0.11979	-0.88021	-1.88021	-2.88021
-0.00584	0.99416	-0.00584	-0.00584	-0.00584	-0.17526	0.82474	-0.17526	-1.17526	-2.17526
-0.01808	-0.01808	0.98192	-0.01808	-0.01808	-1.46107	-0.46107	0.53893	-0.46107	-1.46107
-0.02842	-0.02842	-0.02842	0.97158	-0.02842	-2.71831	-1.71831	-0.71831	0.28169	-0.71831
-0.32238	-0.32238	-0.32238	-0.32238	0.67762	-3.93063	-2.93063	-1.93063	-0.93063	0.06937

CEILING+3

0.99836	-0.00164	-0.00164	-0.00164	-0.00164	1.38021	0.38021	-0.61979	-1.61979	-2.61979
-0.00690	0.99310	-0.00690	-0.00690	-0.00690	0.01640	1.01640	0.01640	-0.98360	-1.98360
-0.02176	-0.02176	0.97824	-0.02176	-0.02176	-1.33618	-0.33618	0.66382	-0.33618	-1.33618
-0.03457	-0.03457	-0.03457	0.96543	-0.03457	-2.65336	-1.65336	-0.65336	0.34664	-0.65336
-0.38579	-0.38579	-0.38579	-0.38579	0.61421	-3.91433	-2.91433	-1.91433	-0.91433	0.08567

CEILING+5

0.99798	-0.00202	-0.00202	-0.00202	-0.00202	1.81055	0.81055	-0.18945	-1.18945	-2.18945
-0.00854	0.99146	-0.00854	-0.00854	-0.00854	0.33330	1.33330	0.33330	-0.66670	-1.66670
-0.02695	-0.02695	0.97305	-0.02695	-0.02695	-1.12923	-0.12923	0.87077	-0.12923	-1.12923
-0.04281	-0.04281	-0.04281	0.95719	-0.04281	-2.54533	-1.54533	-0.54533	0.45467	-0.54533
-0.47763	-0.47763	-0.47763	-0.47763	0.52237	-3.88767	-2.88767	-1.88767	-0.88767	0.11233

CEILING+7

0.99773	-0.00227	-0.00227	-0.00227	-0.00227	2.16005	1.16005	0.16005	-0.83995	-1.83995
-0.00968	0.99032	-0.00968	-0.00968	-0.00968	0.59068	1.59068	0.59068	-0.40932	-1.40932
-0.03056	-0.03056	0.96944	-0.03056	-0.03056	-0.96114	0.03886	1.03886	0.03886	-0.96114
-0.04854	-0.04854	-0.04854	0.95146	-0.04854	-2.45759	-1.45759	-0.45759	0.54241	-0.45759
-0.54193	-0.54193	-0.54193	-0.54193	0.45807	-3.86610	-2.86610	-1.86610	-0.86610	0.13390

VISIBILITY+2

0.99702	-0.00298	-0.00298	-0.00298	-0.00298	1.83514	0.83514	-0.16486	-1.16486	-2.16486
-0.00306	0.99694	-0.00306	-0.00306	-0.00306	0.36942	1.36942	0.36942	-0.63058	-1.63058
-0.00897	-0.00897	0.99103	-0.00897	-0.00897	-1.09117	-0.09117	0.90883	-0.09117	-1.09117
-0.01794	-0.01794	-0.01794	0.98206	-0.01794	-2.53676	-1.53676	-0.53676	0.46324	-0.53676
-0.52970	-0.52970	-0.52970	-0.52970	0.47030	-3.95232	-2.95232	-1.95232	-0.95232	0.04768

VISIBILITY+3

0.99672	-0.00328	-0.00328	-0.00328	-0.00328	2.19204	1.19204	0.19204	-0.80796	-1.80796
-0.00327	0.99673	-0.00327	-0.00327	-0.00327	0.63556	1.63556	0.63556	-0.36444	-1.36444
-0.01086	-0.01086	0.98914	-0.01086	-0.01086	-0.91527	0.08473	1.08473	0.08473	-0.91527
-0.02080	-0.02080	-0.02080	0.97920	-0.02080	-2.44732	-1.44732	-0.44732	0.55268	-0.44732
-0.61217	-0.61217	-0.61217	-0.61217	0.38783	-3.94342	-2.94342	-1.94342	-0.94342	0.05658

VISIBILITY+5

0.99614	-0.00381	-0.00381	-0.00381	-0.00381	2.71235	1.71235	0.71235	-0.28765	-1.28765
-0.00378	0.99622	-0.00378	-0.00378	-0.00378	1.02380	2.02380	1.02380	0.02380	-0.97620
-0.01260	-0.01260	0.98740	-0.01260	-0.01260	-0.65179	0.34221	1.34221	0.34221	-0.65179
-0.02416	-0.02416	-0.02416	0.97584	-0.02416	-2.31617	-1.31617	-0.31617	0.68383	-0.31617
-0.71070	-0.71070	-0.71070	-0.71070	0.28930	-3.93004	-2.93004	-1.93004	-0.93004	0.06996

VISIBILITY+7

0.99589	-0.00412	-0.00412	-0.00412	-0.00412	2.03644	2.03644	1.03644	0.03644	-0.96356
-0.00408	0.99592	-0.00408	-0.00408	-0.00408	1.26560	2.26560	1.26560	0.73440	-0.73440
-0.01359	-0.01359	0.98641	-0.01359	-0.01359	-0.49745	0.50255	1.50255	0.50255	-0.49745
-0.02621	-0.02621	-0.02621	0.97379	-0.02621	-2.23455	-1.23455	-0.23455	0.76545	-0.23455
-0.76758	-0.76758	-0.76758	-0.76758	0.23242	-3.92159	-2.92159	-1.92159	-0.92159	0.07841

WESTOVER AFB, CHICOPEE, MASS.

HEIDKE LOSS MATRIX

VERNON LOSS MATRIX

CEILING+2

0.99328	-0.00672	-0.00672	-0.00672	-0.00672	1.09932	0.09932	-0.90068	-1.90068	-2.90068
-0.01139	0.98861	-0.01139	-0.01139	-0.01139	-0.20471	0.79529	-0.20471	-1.20471	-2.20471
-0.03282	-0.03282	0.96718	-0.03282	-0.03282	-1.49052	-0.49052	0.50948	-0.49052	-1.49052
-0.07311	-0.07311	-0.07311	0.92689	-0.07311	-2.72384	-1.72384	-0.72384	0.27616	-0.72384
-0.26951	-0.26951	-0.26951	-0.26951	0.73049	-3.84020	-2.84020	-1.84020	-0.84020	0.15980

CEILING+3

0.99174	-0.00826	-0.00826	-0.00826	-0.00826	1.40259	0.40259	-0.59741	-1.59741	-2.59741
-0.01375	0.98625	-0.01375	-0.01375	-0.01375	0.01459	1.01459	0.01459	-0.98541	-1.98541
-0.04084	-0.04084	0.95916	-0.04084	-0.04084	-1.35062	-0.35062	0.64938	-0.35062	-1.35062
-0.09028	-0.09028	-0.09028	0.90972	-0.09028	-2.64807	-1.64807	-0.64807	0.35193	-0.64807
-0.33118	-0.33118	-0.33118	-0.33118	0.66882	-3.79575	-2.79575	-1.79575	-0.79575	0.20425

CEILING+4

0.98979	-0.01021	-0.01021	-0.01021	-0.01021	1.82883	0.82883	-0.17117	-1.17117	-2.17117
-0.01701	0.98299	-0.01701	-0.01701	-0.01701	0.32291	1.32291	0.32291	-0.67709	-1.67709
-0.05052	-0.05052	0.94948	-0.05052	-0.05052	-1.15326	-0.15326	0.84674	-0.15326	-1.15326
-0.11167	-0.11167	-0.11167	0.88833	-0.11167	-2.54112	-1.54112	-0.54112	0.45888	-0.54112
-0.40979	-0.40979	-0.40979	-0.40979	0.59021	-3.73376	-2.73376	-1.73376	-0.73376	0.26624

CEILING+6

0.98847	-0.01153	-0.01153	-0.01153	-0.01153	2.19028	1.19028	0.19028	-0.80972	-1.80972
-0.01919	0.98081	-0.01919	-0.01919	-0.01919	0.58833	1.58833	0.58833	-0.41167	-1.41167
-0.04157	-0.04157	0.95843	-0.04157	-0.04157	-0.97825	0.02175	1.02175	0.02175	-0.97825
-0.14145	-0.14145	-0.14145	0.85855	-0.14145	-2.46822	-1.46822	-0.46822	0.53178	-0.46822
-0.46254	-0.46254	-0.46254	-0.46254	0.53746	-3.69750	-2.69750	-1.69750	-0.69750	0.30250

VISIBILITY+2

0.94055	-0.00945	-0.00945	-0.00945	-0.00945	1.31545	0.31545	-0.68455	-1.68455	-2.68455
-0.01000	0.99000	-0.01000	-0.01000	-0.01000	-0.03170	0.96830	-0.03170	-1.03170	-2.03170
-0.03292	-0.03292	0.96708	-0.03292	-0.03292	-1.36365	-0.36365	0.63635	-0.36365	-1.36365
-0.03827	-0.03827	-0.03827	0.96173	-0.03827	-2.64562	-1.64562	-0.64562	0.35438	-0.64562
-0.38546	-0.38546	-0.38546	-0.38546	0.61454	-3.86949	-2.86949	-1.86949	-0.86949	0.13051

VISIBILITY+3

0.98927	-0.01073	-0.01073	-0.01073	-0.01073	1.69981	0.69981	-0.30019	-1.30019	-2.30019
-0.01164	0.98836	-0.01164	-0.01164	-0.01164	0.25084	1.25084	0.25084	-0.74916	-1.74916
-0.03953	-0.03953	0.96047	-0.03953	-0.03953	-1.17910	-0.17910	0.82090	-0.17910	-1.17910
-0.04648	-0.04648	-0.04648	0.95352	-0.04648	-2.54443	-1.54443	-0.54443	0.45557	-0.54443
-0.46244	-0.46244	-0.46244	-0.46244	0.53756	-3.83378	-2.83378	-1.83378	-0.83378	0.16622

VISIBILITY+4

0.98729	-0.01271	-0.01271	-0.01271	-0.01271	1.98877	0.98877	-0.01123	-1.01123	-2.01123
-0.01348	0.98652	-0.01348	-0.01348	-0.01348	0.46392	1.46392	0.46392	-0.53608	-1.53608
-0.04434	-0.04434	0.95566	-0.04434	-0.04434	-1.03795	-0.03795	0.96205	-0.03795	-1.03795
-0.05154	-0.05154	-0.05154	0.94846	-0.05154	-2.46426	-1.46426	-0.46426	0.53574	-0.46426
-0.51918	-0.51918	-0.51918	-0.51918	0.48082	-3.80271	-2.80271	-1.80271	-0.80271	0.19729

VISIBILITY+6

0.98534	-0.01466	-0.01466	-0.01466	-0.01466	2.45151	1.45151	0.45151	-0.54849	-1.54849
-0.01553	0.98447	-0.01553	-0.01553	-0.01553	0.80454	1.80454	0.80454	-0.19546	-1.19546
-0.05115	-0.05115	0.94885	-0.05115	-0.05115	-0.81414	0.18586	1.18586	0.18586	-0.81414
-0.05948	-0.05948	-0.05948	0.94052	-0.05948	-2.33967	-1.33967	-0.33967	0.66033	-0.33967
-0.59898	-0.59898	-0.59898	-0.59898	0.40102	-3.75687	-2.75687	-1.75687	-0.75687	0.24313

ATLANTIC CITY, N.J. AIRPORT

HEIDKE LOSS MATRIX

VERNON LOSS MATRIX

CEILING+3

0.98651	-0.01349	-0.01349	-0.01349	-0.01349	1.22700	0.22700	-0.77300	-1.77300	-2.77300
-0.01908	0.98092	-0.01908	-0.01908	-0.01908	-0.09736	0.90264	-0.59736	-1.09736	-2.09736
-0.02732	-0.02732	0.97268	-0.02732	-0.02732	-1.39407	-0.39407	0.60593	-0.39407	-1.39407
-0.03926	-0.03926	-0.03926	0.96074	-0.03926	-2.65116	-1.65116	-0.65116	0.34884	-0.65116
-0.37532	-0.37532	-0.37532	-0.37532	0.62468	-3.85134	-2.85134	-1.85134	-0.05134	0.14866

CEILING+5

0.98352	-0.01648	-0.01648	-0.01648	-0.01648	1.60016	0.60016	-0.39984	-1.39984	-2.39984
-0.02333	0.97667	-0.02333	-0.02333	-0.02333	0.17715	1.17715	0.17715	-0.82285	-1.82285
-0.03339	-0.03339	0.96661	-0.03339	-0.03339	-1.20978	-0.20978	0.79022	-0.20978	-1.20978
-0.04796	-0.04796	-0.04796	0.95204	-0.04796	-2.54507	-1.54507	-0.54507	0.45493	-0.54507
-0.45876	-0.45876	-0.45876	-0.45876	0.54124	-3.80616	-2.80616	-1.80616	-0.80616	0.19384

CEILING+7

0.98175	-0.01825	-0.01825	-0.01825	-0.01825	1.87712	0.87712	-0.12288	-1.12288	-2.12288
-0.02588	0.97412	-0.02588	-0.02588	-0.02588	0.38089	1.38089	0.38089	-0.61911	-1.61911
-0.03700	-0.03700	0.96300	-0.03700	-0.03700	-1.07301	-0.07301	0.92699	-0.07301	-1.07301
-0.05318	-0.05318	-0.05318	0.94682	-0.05318	-2.46638	-1.46638	-0.46638	0.53362	-0.46638
-0.50883	-0.50883	-0.50883	-0.50883	0.49117	-3.77274	-2.77274	-1.77274	-0.77274	0.22726

VISIBILITY+3

0.98158	-0.01842	-0.01842	-0.01842	-0.01842	1.73255	0.73255	-0.26745	-1.26745	-2.26745
-0.01183	0.98817	-0.01183	-0.01183	-0.01183	0.29470	1.29470	0.29470	-0.70530	-1.70530
-0.02012	-0.02012	0.97988	-0.02012	-0.02012	-1.12477	-0.12477	0.87523	-0.12477	-1.12477
-0.02220	-0.02220	-0.02220	0.97780	-0.02220	-2.51299	-1.51299	-0.51299	0.48701	-0.51299
-0.52796	-0.52796	-0.52796	-0.52796	0.47204	-3.86671	-2.86671	-1.86671	-0.86671	0.13329

VISIBILITY+5

0.97848	-0.02152	-0.02152	-0.02152	-0.02152	2.21075	1.21075	0.21075	-0.78925	-1.78925
-0.01383	0.98617	-0.01383	-0.01383	-0.01383	0.65203	1.65203	0.65203	-0.34797	-1.34797
-0.02354	-0.02354	0.97646	-0.02354	-0.02354	-0.88325	0.11675	1.11675	0.11675	-0.88325
-0.02598	-0.02598	-0.02598	0.97402	-0.02598	-2.37865	-1.37865	-0.37865	0.62135	-0.37865
-0.61777	-0.61777	-0.61777	-0.61777	0.38223	-3.83003	-2.83003	-1.83003	-0.83003	0.16997

VISIBILITY+7

0.97662	-0.02338	-0.02338	-0.02338	-0.02338	2.52136	1.52136	0.52136	-0.47864	-1.47864
-0.01505	0.98495	-0.01505	-0.01505	-0.01505	0.88413	1.88413	0.88413	-0.11587	-1.11587
-0.02558	-0.02558	0.97442	-0.02558	-0.02558	-0.72637	0.27363	1.27363	0.27363	-0.72637
-0.02825	-0.02825	-0.02825	0.97175	-0.02825	-2.29143	-1.29143	-0.29143	0.70857	-0.29143
-0.67198	-0.67198	-0.67198	-0.67198	0.32802	-3.80630	-2.80630	-1.80630	-0.80630	0.19370

IDLEWILD INTERNATIONAL AIRPORT

HEIDKE LOSS MATRIX

VERNON LOSS MATRIX

CEILING+2

0.99592	-0.00408	-0.00408	-0.00408	-0.00408	1.15175	0.15175	-0.84825	-1.84825	-2.84825
-0.01190	0.98811	-0.01190	-0.01190	-0.01190	-0.15485	0.84515	-0.15485	-1.15485	-2.15485
-0.02141	-0.02141	0.97859	-0.02141	-0.02141	-1.44328	-0.44328	0.55672	-0.44328	-1.44328
-0.03556	-0.03556	-0.03556	0.96444	-0.03556	-2.69900	-1.69900	-0.69900	0.30100	-0.69900
-0.33662	-0.33662	-0.33662	-0.33662	0.66338	-3.90040	-2.90040	-1.90040	-0.90040	0.09960

CEILING+3

0.99504	-0.00496	-0.00496	-0.00496	-0.00496	1.41109	0.41109	-0.58891	-1.58891	-2.58891
-0.01395	0.98605	-0.01395	-0.01395	-0.01395	0.03570	1.03570	0.03570	-0.96430	-1.96430
-0.02475	-0.02475	0.97525	-0.02475	-0.02475	-1.31734	-0.31734	0.68266	-0.31734	-1.31734
-0.04149	-0.04149	-0.04149	0.95851	-0.04149	-2.63075	-1.63075	-0.63075	0.36925	-0.63075
-0.39355	-0.39355	-0.39355	-0.39355	0.60645	-3.87771	-2.87771	-1.87771	-0.87771	0.12229

CEILING+5

0.99402	-0.00598	-0.00598	-0.00598	-0.00598	1.79992	0.79992	-0.20008	-1.20008	-2.20008
-0.01681	0.98319	-0.01681	-0.01681	-0.01681	0.32110	1.32110	0.32110	-0.67890	-1.67890
-0.02982	-0.02982	0.97018	-0.02982	-0.02982	-1.12922	-0.12922	0.87078	-0.12922	-1.12922
-0.04996	-0.04996	-0.04996	0.95004	-0.04996	-2.52899	-1.52899	-0.52899	0.47101	-0.52899
-0.47418	-0.47418	-0.47418	-0.47418	0.52582	-3.84405	-2.84405	-1.84405	-0.84405	0.15595

CEILING+7

0.99328	-0.00672	-0.00672	-0.00672	-0.00672	2.10879	1.10879	-0.10879	-0.89121	-1.89121
-0.01885	0.98115	-0.01885	-0.01885	-0.01885	0.54783	1.54783	0.54783	-0.45217	-1.45217
-0.03345	-0.03345	0.96655	-0.03345	-0.03345	-0.97977	0.02023	1.02023	0.02023	-0.97977
-0.05599	-0.05599	-0.05599	0.94401	-0.05599	-2.44814	-1.44814	-0.44814	0.55186	-0.44814
-0.53202	-0.53202	-0.53202	-0.53202	0.46798	-3.81735	-2.81735	-1.81735	-0.81735	0.18265

VISIBILITY+2

0.99414	-0.00586	-0.00586	-0.00586	-0.00586	1.70770	0.70770	-0.29230	-1.29230	-2.29230
-0.00742	0.99258	-0.00742	-0.00742	-0.00742	0.27268	1.27268	0.27268	-0.72732	-1.72732
-0.01196	-0.01196	0.98804	-0.01196	-0.01196	-1.15089	-0.15089	0.84911	-0.15089	-1.15089
-0.01923	-0.01923	-0.01923	0.98077	-0.01923	-2.55603	-1.55603	-0.55603	0.44397	-0.55603
-0.53189	-0.53189	-0.53189	-0.53189	0.46811	-3.93155	-2.93155	-1.93155	-0.93155	0.06845

VISIBILITY+3

0.99263	-0.00737	-0.00737	-0.00737	-0.00737	2.08974	1.08974	-0.08974	-0.91026	-1.91026
-0.00826	0.99174	-0.00826	-0.00826	-0.00826	0.55769	1.55769	0.55769	-0.44231	-1.44231
-0.01421	-0.01421	0.98579	-0.01421	-0.01421	-0.96077	0.03923	1.03923	0.03923	-0.96077
-0.02303	-0.02303	-0.02303	0.97697	-0.02303	-2.45584	-1.45584	-0.45584	0.54416	-0.45584
-0.60863	-0.60863	-0.60863	-0.60863	0.39137	-3.91302	-2.91302	-1.91302	-0.91302	0.08698

VISIBILITY+5

0.99137	-0.00863	-0.00863	-0.00863	-0.00863	2.62396	1.62396	-0.62396	-0.37604	-1.37604
-0.00967	0.99033	-0.00967	-0.00967	-0.00967	0.95590	1.95590	0.95590	-0.04410	-1.04410
-0.01661	-0.01661	0.98339	-0.01661	-0.01661	-0.64598	0.30492	1.30492	0.30492	-0.69508
-0.02694	-0.02694	-0.02694	0.97306	-0.02694	-2.31672	-1.31672	-0.31672	0.68328	-0.31672
-0.71177	-0.71177	-0.71177	-0.71177	0.28801	-3.89090	-2.89090	-1.89090	-0.89090	0.10920

VISIBILITY+7

0.99069	-0.00931	-0.00931	-0.00931	-0.00931	2.95656	1.95656	-0.95656	-0.04344	-1.04344
-0.01047	0.98958	-0.01047	-0.01047	-0.01047	1.20385	2.20385	1.20385	-0.20385	-0.79615
-0.01794	-0.01794	0.98206	-0.01794	-0.01794	-0.52966	0.47034	1.47034	0.47034	-0.52966
-0.02922	-0.02922	-0.02922	0.97078	-0.02922	-2.23010	-1.23010	-0.23010	0.76990	-0.23010
-0.76842	-0.76842	-0.76842	-0.76842	0.23158	-3.47702	-2.47702	-1.47702	-0.47702	0.12298

OFFUTT AFB, OMAHA, NEBRASKA

HEIDKE LOSS MATRIX

VERNON LOSS MATRIX

CEILING*2

0.99720	-0.00280	-0.00280	-0.00280	-0.00280	1.00020	0.00020	-0.00020	-1.00020	-2.99980
-0.01715	0.98285	-0.01715	-0.01715	-0.01715	-0.27136	0.72864	-0.27136	-1.27136	-2.27136
-0.01230	-0.01230	0.98770	-0.01230	-0.01230	-1.51703	-0.51703	0.48297	-0.51703	-1.51703
-0.04913	-0.04913	-0.04913	0.95087	-0.04913	-2.74413	-1.74413	-0.74413	0.25587	-0.74413
-0.28402	-0.28402	-0.28402	-0.28402	0.71598	-3.89708	-2.89708	-1.89708	-0.89708	0.10292

CEILING*4

0.99615	-0.00385	-0.00385	-0.00385	-0.00385	1.45063	0.45063	-0.54937	-1.54937	-2.54937
-0.02363	0.97637	-0.02363	-0.02363	-0.02363	0.05677	1.05677	0.05677	-0.94323	-1.94323
-0.01694	-0.01694	0.98306	-0.01694	-0.01694	-1.29953	-0.29953	0.70047	-0.29953	-1.29953
-0.06764	-0.06764	-0.06764	0.93236	-0.06764	-2.62889	-1.62889	-0.62889	0.37111	-0.62889
-0.39107	-0.39107	-0.39107	-0.39107	0.60893	-3.85070	-2.85070	-1.85070	-0.85070	0.14930

CEILING*6

0.99544	-0.00456	-0.00456	-0.00456	-0.00456	1.78976	0.78976	-0.21024	-1.21024	-2.21024
-0.02801	0.97199	-0.02801	-0.02801	-0.02801	0.30382	1.30382	0.30382	-0.69618	-1.69618
-0.02006	-0.02006	0.97994	-0.02006	-0.02006	-1.13575	-0.13575	0.86425	-0.13575	-1.13575
-0.08020	-0.08020	-0.08020	0.91980	-0.08020	-2.54213	-1.54213	-0.54213	0.45787	-0.54213
-0.46349	-0.46349	-0.46349	-0.46349	0.53651	-3.81578	-2.81578	-1.81578	-0.81578	0.18422

VISIBILITY*2

0.99662	-0.00338	-0.00338	-0.00338	-0.00338	1.43410	0.43410	-0.56590	-1.56590	-2.56590
-0.00458	0.99542	-0.00458	-0.00458	-0.00458	0.06749	1.06749	0.06749	-0.93251	-1.93251
-0.01289	-0.01289	0.98711	-0.01289	-0.01289	-1.29210	-0.29210	0.70790	-0.29210	-1.29210
-0.01615	-0.01615	-0.01615	0.98385	-0.01615	-2.63188	-1.63188	-0.63188	0.36812	-0.63188
-0.44714	-0.44714	-0.44714	-0.44714	0.55286	-3.94686	-2.94686	-1.94686	-0.94686	0.05314

VISIBILITY*4

0.99557	-0.00443	-0.00443	-0.00443	-0.00443	2.04322	1.04322	0.04322	-0.95678	-1.95678
-0.00549	0.99451	-0.00549	-0.00549	-0.00549	0.52049	1.52049	0.52049	-0.47951	-1.47951
-0.01686	-0.01686	0.98314	-0.01686	-0.01686	-0.99142	0.00858	1.00858	0.00858	-0.99142
-0.02111	-0.02111	-0.02111	0.97889	-0.02111	-2.47552	-1.47552	-0.47552	0.52448	-0.47552
-0.58474	-0.58474	-0.58474	-0.58474	0.41526	-3.92428	-2.92428	-1.92428	-0.92428	0.07572

VISIBILITY*6

0.99446	-0.00554	-0.00554	-0.00554	-0.00554	2.44143	1.44143	0.44143	-0.55857	-1.55857
-0.00682	0.99318	-0.00682	-0.00682	-0.00682	0.81730	1.81730	0.81730	-0.18270	-1.18270
-0.01918	-0.01918	0.98082	-0.01918	-0.01918	-0.79485	0.20515	1.20515	0.20515	-0.79485
-0.02404	-0.02404	-0.02404	0.97596	-0.02404	-2.37330	-1.37330	-0.37330	0.62670	-0.37330
-0.66559	-0.66559	-0.66559	-0.66559	0.33441	-3.90952	-2.90952	-1.90952	-0.90952	0.09048

HANDOLPH AFB, SAN ANTONIO, TEXAS

HEIDKE LOSS MATRIX

VERNON LOSS MATRIX

CEILING+2

0.99322	-0.00678	-0.00678	-0.00678	-0.00678	1.14214	0.14214	-0.85786	-1.85786	-2.85786
-0.00919	0.99081	-0.00919	-0.00919	-0.00919	-0.17740	0.82260	-0.17740	-1.17740	-2.17740
-0.05421	-0.05421	0.94579	-0.05421	-0.05421	-1.48219	-0.48219	0.51781	-0.48219	-1.48219
-0.06068	-0.06068	-0.06068	0.93932	-0.06068	-2.70001	-1.70001	-0.70001	0.29999	-0.70001
-0.28104	-0.28104	-0.28104	-0.28104	0.71896	-3.82048	-2.82048	-1.82048	-0.82048	0.17952

CEILING+4

0.99044	-0.00956	-0.00956	-0.00956	-0.00956	1.69505	0.69505	-0.30495	-1.30495	-2.30495
-0.01295	0.98705	-0.01295	-0.01295	-0.01295	0.22083	1.22083	0.22083	-0.77917	-1.77917
-0.07637	-0.07637	0.92363	-0.07637	-0.07637	-1.23151	-0.23151	0.76849	-0.23151	-1.23151
-0.08549	-0.08549	-0.08549	0.91451	-0.08549	-2.55477	-1.55477	-0.55477	0.44523	-0.55477
-0.39592	-0.39592	-0.39592	-0.39592	0.60408	-3.73355	-2.73355	-1.73355	-0.73355	0.26645

CEILING+6

0.98862	-0.01138	-0.01138	-0.01138	-0.01138	2.10533	1.10533	0.10533	-0.89467	-1.89467
-0.01543	0.98457	-0.01543	-0.01543	-0.01543	0.51633	1.51633	0.51633	-0.48367	-1.48367
-0.09092	-0.09092	0.90908	-0.09092	-0.09092	-1.04547	-0.04547	0.95453	-0.04547	-1.04547
-0.10183	-0.10183	-0.10183	0.89817	-0.10183	-2.44702	-1.44702	-0.44702	0.55298	-0.44702
-0.47150	-0.47150	-0.47150	-0.47150	0.52850	-3.66903	-2.66903	-1.66903	-0.66903	0.33097

VISIBILITY+2

0.99468	-0.00532	-0.00532	-0.00532	-0.00532	1.57604	0.57604	-0.42396	-1.42396	-2.42396
-0.00381	0.99619	-0.00381	-0.00381	-0.00381	0.17636	1.17636	0.17636	-0.82364	-1.82364
-0.01268	-0.01268	0.98732	-0.01268	-0.01268	-1.21723	-0.21723	0.78277	-0.21723	-1.21723
-0.01289	-0.01289	-0.01289	0.98711	-0.01289	-2.59056	-1.59056	-0.59056	0.40944	-0.59056
-0.47612	-0.47612	-0.47612	-0.47612	0.52388	-3.94329	-2.94329	-1.94329	-0.94329	0.05671

VISIBILITY+4

0.99300	-0.00700	-0.00700	-0.00700	-0.00700	2.27734	1.27734	0.27734	-0.72266	-1.72266
-0.00500	0.99500	-0.00500	-0.00500	-0.00500	0.69981	1.69981	0.69981	-0.30019	-1.30019
-0.01669	-0.01669	0.98331	-0.01669	-0.01669	-0.86894	0.13106	1.13106	0.13106	-0.86894
-0.01694	-0.01694	-0.01694	0.98306	-0.01694	-2.40838	-1.40838	-0.40838	0.59162	-0.40838
-0.62602	-0.62602	-0.62602	-0.62602	0.37398	-3.91806	-2.91806	-1.91806	-0.91806	0.08194

VISIBILITY+6

0.99216	-0.00784	-0.00784	-0.00784	-0.00784	2.67827	1.67827	0.67827	-0.32173	-1.32173
-0.00562	0.99438	-0.00562	-0.00562	-0.00562	0.99905	1.99905	0.99905	-0.00095	-1.00095
-0.01869	-0.01869	0.98131	-0.01869	-0.01869	-0.66980	0.33020	1.33020	0.33020	-0.66980
-0.01900	-0.01900	-0.01900	0.98100	-0.01900	-2.30420	-1.30420	-0.30420	0.69580	-0.30420
-0.70133	-0.70133	-0.70133	-0.70133	0.29867	-3.90357	-2.90357	-1.90357	-0.90357	0.09643

TABLE 2-4
VERNON'S SCHEME OF DEMERITS

		Observed				
		1	2	3	4	5
Forecast	1	0	1	2	3	4
	2	1	0	1	2	3
	3	2	1	0	1	2
	4	3	2	1	0	1
	5	4	3	2	1	0

where r_i is the total number of times that class i is forecast, n_{ij} is the number of times that class j is observed when class i is forecast, p_j is the climatological probability of class j , and d_{ij} is the demerit ascribed to the error of forecasting category i when category j is observed. The demerits are displayed in Table 2-4.

The method for obtaining the weights to maximize the score was also devised under this contract by Bryan [4]. The sets of 25 weights for each of 42 predictands are given in Table 2-3, also.

2.2 Verification of Test Forecasts

The weight functions discussed above were applied to probability forecasts to produce categorical forecasts for four statistical techniques for the 42 predictands listed in Table 2-5. The statistical techniques are climatological expectancy of persistence (CEP), grouping, Lund, and multiple-discriminant analysis (MDA). Categorical persistence and subjective forecasts for the same 42 predictands were available also. The forecasting skill of the six techniques on all 42 predictands were measured by three scores: percentage of hits, Heidke skill score, and Vernon skill score.

To aid in analyzing the scores, two quantities [7], I and t , were computed. The index I is a measure of the amount of increase or decrease in forecasting skill of one technique relative to another technique. The paired-comparison t -value tests whether the mean score for one forecast technique is statistically significantly different from the mean score of another technique.

2.2.1 Percentage of Hits

The percentages of hits for six forecast techniques for 42 predictands are given in Table 2-5. The MDA forecasts achieved the highest score on 24 of the 42 predictands, CEP was high on eight, and high scores on the remaining 10 predictands are ties or are spread among the other forecast techniques.

For the percentage-of-hits score, the index I is

$$I = \frac{PH_S - PH_{PST}}{100 - PH_{PST}} \times 100, \quad (2-8)$$

where PH_S and PH_{PST} indicate statistical and persistence percentage of hits, respectively. Values of I for the "average-over-station" percentages of hits and the "average-over-all-stations" are presented in Table 2-6. The MDA technique yielded the highest values on all six averages and on the overall average. For all techniques, there is a consistent improvement in the index with increasing forecast length. The index I for MDA increases from 6.9 to 22.1% for ceiling forecasts and from 11.4 to 32.7% for visibility forecasts. For all predictands combined, the increase of MDA over persistence

TABLE 2-5
PERCENTAGE-OF-HITS TEST RESULTS FOR CATEGORICAL FORECASTS
FOR EVALUATION-YEAR DATA

(a) Predictand element is ceiling

Predictand		No. of tests	Percentage of hits					
Sta	Test length, hr		Pers	Subj	CEP	Group	Lund	MDA
ACY	3	681	87.22	86.05	86.93	85.70	75.13	37.31
CEF	2	650	83.38	84.46	86.31	85.08	83.39	97.85
DCA	3	541	91.68	90.02	90.57	91.31	91.15	91.65
IDL	3	1,283	87.14	87.45	87.50	86.20	77.67	87.76
OFF	2	694	89.77	86.60	89.77	89.77	84.29	94.24
RND	2	692	60.78	73.90	81.21	77.7	75.76	77.91
WRI	2	511	83.80	81.51	83.14	84.7	84.7	86.09
Mean	2-3	5,152	86.26	85.19	86.49	86.21	79.46	77.21
ACY	5	651	84.13	85.25	94.4	77.1	77.1	77.1
CEF	4	693	79.54	79.39	79.68	79.69	79.69	79.69
DCA	5	544	90.07	88.97	90.99	91.36	91.36	91.36
IDL	5	1,451	81.94	83.32	83.12	83.57	83.57	83.57
OFF	4	652	83.59	83.90	83.28	82.01	82.01	82.01
RND	4	680	71.47	77.06	73.69	73.69	73.69	73.69
WRI	4	519	77.77	80.15	80.52	80.52	80.52	80.52
Mean	4-5	5,152	81.39	82.59	82.65	82.54	77.06	78.14
ACY	7	676	90.47	82.10	82.10	73.53	70.71	34.32
CEF	6	669	73.54	78.77	76.23	79.93	79.93	79.93
DCA	7	631	86.34	93.25	93.69	93.69	93.69	93.69
IDL	7	1,452	78.24	81.32	81.06	81.75	77.61	82.23
OFF	6	664	82.23	81.73	81.73	83.53	83.53	83.53
RND	6	673	65.93	74.73	74.64	64.17	64.17	64.17
WRI	6	519	76.30	79.53	79.64	79.64	64.32	64.32
Mean	6-7	5,239	77.71	81.19	80.56	79.00	74.71	62.61

(b) Predictand element is visibility

Predictand		No. of tests	Percentage of hits					
Sta	Test length, hr		Pers	Subj	CEP	Group	Lund	MDA
ACY	3	699	81.31	81.31	80.7	86.52	84.26	87.41
CEF	2	682	73.03	73.03	73.19	85.70	64.17	87.56
DCA	3	609	91.9	91.9	92.49	92.12	92.12	92.12
IDL	3	1,336	80.1	81.1	80.12	79.6	79.6	79.6
OFF	2	694	92.65	91.39	92.23	92.56	92.56	92.56
RND	2	702	91.45	91.46	92.17	91.1	91.1	92.51
WRI	2	612	82.63	75.3	82.3	75.3	91.54	91.51
Mean	2-3	5,334	83.15	81.12	80.22	87.1	76.71	87.84
ACY	5	663	80.22	80.20	80.80	85.7	85.7	80.2
CEF	4	672	81.70	80.70	80.30	81.7	67.66	82.2
DCA	5	696	91.38	91.6	93.27	93.10	93.33	93.68
IDL	5	1,311	86.50	86.12	86.50	86.50	86.50	86.50
OFF	4	693	91.1	91.1	91.77	91.5	91.5	92.56
RND	4	682	91.00	93.70	92.61	93.7	93.7	93.16
WRI	4	514	85.63	79.20	76.56	79.2	79.2	79.5
Mean	4-5	5,231	86.80	86.26	89.14	89.84	83.23	89.54
ACY	7	657	83.71	88.89	91.17	92.24	91.3	82.39
CEF	6	639	78.25	80.91	81.69	79.81	86.65	82.00
DCA	7	713	91.44	91.44	94.81	94.53	94.81	94.71
IDL	7	1,338	84.58	85.13	89.46	89.31	89.46	89.46
OFF	6	618	90.73	91.10	93.20	93.37	94.79	94.20
RND	6	622	89.74	92.67	95.16	94.13	75.51	94.51
WRI	6	517	76.21	76.02	81.62	79.34	79.34	79.34
Mean	6-7	5,164	85.19	86.75	90.87	92.24	91.51	86.44

(c) Composite of (a) and (b) for all stations and forecasts

No. of tests	Mean percentage of hits					
	Pers	Subj	CEP	Group	Lund	MDA
31,372	84.21	84.96	86.22	85.89	79.70	84.1

TABLE 2-6
PERCENT IMPROVEMENT (I) OF PERCENTAGE OF HITS FOR CATEGORICAL FORECASTS
RELATIVE TO PERSISTENCE FOR EVALUATION-YEAR DATA

Predictand		I, %				
Elem	Fcst length, hr	Subj	CEP	Group	Lund	MDA
CIG	2-3	-7.8	1.7	-1.8	-48.8	6.9
	4-5	6.4	3.7	5.1	-20.8	14.8
	6-7	15.6	12.8	12.5	-14.5	22.1
	2-3	-8.7	9.0	2.2	-37.5	11.4
VIS	4-5	2.7	19.0	17.1	-25.4	22.0
	6-7	10.6	31.6	27.4	-24.8	32.7
All predictands		4.7	13.7	10.6	-26.7	18.7

TABLE 2-7
t-VALUES COMPARING THE MEAN PERCENTAGE OF HITS FOR CATEGORICAL
FORECASTS RELATIVE TO PERSISTENCE FOR EVALUATION-YEAR DATA

Fcst length, hr	t-value				
	Subj	CEP	Group	Lund	MDA
2-3	-3.20	1.80*	-0.00	-0.98	2.81†
4-5	1.33	3.21†	3.45†	-2.33	7.62†
6-7	3.66†	6.07†	6.82†	-2.38	9.57†
All	1.74*	5.69†	5.03†	-2.86	8.70†

*Mean percentage of hits is significantly higher than the mean for persistence at the 5% level.

†Mean percentage of hits is significantly higher than the mean for persistence at the 1% level.

is 18.7%. The corresponding figure for subjective forecasts is 4.7%. However, this is caused by poorer-than-persistence forecasts at 2-3 hr being balanced by better-than-persistence forecasts at 4-7 hr.

The index I is highly dependent upon the length of the forecast period. Therefore, the scores for the same forecast length for the same technique were considered, 14 scores in all, and a paired-comparison t-test was applied to determine whether the mean of the 14 scores for one technique was statistically significantly different from the mean score for another technique. Values of t, comparing all techniques with persistence, are given in Table 2-7. The mean MDA score is statistically significantly higher than the mean persistence score at the 1% level at all three forecast lengths and for all predictands combined; CEP is better at the 5% level for 2-3 hr and at the 1% level for other time periods and over all; grouping is better at 4-7 hr and over all; subjective is better at 6-7 hr and over all. The t-test was applied to compare MDA with CEP, the second-best technique. MDA was significantly better at the 1% level for both 4-5 and 6-7 hr, but there was no significant difference at 2-3 hr. Closer investigation of the scores in Table 2-5 indicates that the improvement of MDA over CEP is larger for the ceiling forecasts than for the visibility forecasts.

Briefly, then, the MDA percentages of hits are higher than those for any other technique, the CEP technique is second, grouping third, subjective fourth, persistence fifth, and Lund sixth. The lead of MDA over the other techniques is statistically significant beyond the 1% level, the only exception being 2-3-hr CEP scores.

2.2.2 Heidke Skill Score

The scores for 42 predictands for six forecast techniques are given in Table 2-8. The MDA scores were highest on 18 of the 42 predictands, subjective scores were high on 15, and persistence was high on five. The means taken over all predictands [part (c) of the table] show that the subjective scores average slightly higher than the MDA scores, then there is a gap to the CEP and persistence mean scores, and grouping and Lund trail.

For the Heidke skill score, the index I is

$$I_j = \frac{H_j - H_{PST}}{1 - H_{PST}}, \quad (2-9)$$

where H_j is the score for the jth technique and H_{PST} is the persistence score. Table 2-9 contains the index values for the "average-over-station" values in Table 2-8. The MDA technique had the highest index on three of the six groupings, and subjective was high on the other three. For both MDA and subjective, the improvement over persistence increases with increasing forecast length. The subjective index values are not as good as MDA at 2-3 hr but are better than MDA at 6-7 hr; the scores for the intermediate period, 4-5 hr, are inconclusive. None of the technique mean scores is statistically significantly higher than the persistence mean score at 2-3 hr or at 4-5 hr; at 6-7 hr, MDA, subjective, and CEP are significantly better than persistence. Considering the means taken over all

TABLE 2-8
HEIDKE-SCORE TEST RESULTS FOR CATEGORICAL FORECASTS
FOR EVALUATION-YEAR DATA

(a) Predictand element is ceiling

Predictand		No. of fcsts	Heidke score					
Sta	Fcst length, hr		Pers	Subj	CEP	Group	lund	MDA
ACY	3	681	0.600	0.583	0.595	0.557	0.457	0.600
CEF	2	650	0.636	0.656	0.700	0.656	0.619	0.727
DCA	3	541	0.615	0.578	0.563	0.590	0.421	0.613
IDL	3	1,283	0.577	0.593	0.582	0.542	0.401	0.554
OFF	2	694	0.712	0.636	0.712	0.712	0.527	0.720
RND	2	692	0.619	0.588	0.616	0.609	0.584	0.619
WRI	2	611	0.612	0.567	0.595	0.636	0.601	0.661
Mean	2-3	5,152	0.624	0.600	0.623	0.615	0.516	0.643
Percent improvement over pers			-	-6.4	-0.3	-2.4	-28.7	5.1
ACY	5	651	0.507	0.559	0.506	0.499	0.312	0.513
CEF	4	655	0.557	0.547	0.567	0.521	0.436	0.603
DCA	5	544	0.540	0.532	0.570	0.526	0.383	0.563
IDL	5	1,451	0.441	0.475	0.439	0.435	0.380	0.473
OFF	4	652	0.529	0.555	0.514	0.467	0.456	0.554
RND	4	680	0.429	0.524	0.430	0.408	0.437	0.455
WRI	4	519	0.509	0.521	0.527	0.519	0.431	0.590
Mean	4-5	5,152	0.502	0.530	0.508	0.482	0.405	0.536
Percent improvement over pers			-	5.6	1.2	-4.0	-19.5	6.8
ACY	7	676	0.400	0.476	0.402	0.421	0.272	0.421
CEF	6	669	0.427	0.529	0.449	0.435	0.380	0.518
DCA	7	681	0.409	0.498	0.435	0.445	0.348	0.487
IDL	7	1,452	0.326	0.438	0.314	0.326	0.347	0.331
OFF	6	664	0.489	0.497	0.473	0.381	0.393	0.535
RND	6	678	0.318	0.483	0.314	0.298	0.280	0.370
WRI	6	519	0.427	0.515	0.452	0.362	0.293	0.519
Mean	6-7	5,339	0.399	0.491	0.406	0.381	0.330	0.454
Percent improvement over pers			-	15.3	1.2	-3.0	-11.5	9.2

(b) Predictand element is visibility

Predictand		No. of fcsts	Heidke score					
Sta	Fcst length, hr		Pers	Subj	CEP	Group	Lund	MDA
ACY	3	699	0.351	0.365	0.327	0.300	0.196	0.326
CEF	2	682	0.507	0.542	0.474	0.543	0.233	0.647
DCA	3	609	0.201	0.240	0.200	0.150	0.161	0.209
IDL	3	1,336	0.299	0.396	0.307	0.263	0.242	0.320
OFF	2	694	0.479	0.428	0.438	0.438	0.391	0.374
RND	2	702	0.375	0.356	0.335	0.365	0.277	0.403
WRI	2	612	0.559	0.502	0.566	0.520	0.488	0.568
Mean	2-3	5,334	0.396	0.404	0.378	0.368	0.284	0.407
Percent improvement over pers			-	1.3	-3.0	-4.6	-13.5	1.8
ACY	5	663	0.327	0.522	0.351	0.303	0.329	0.325
CEF	5	672	0.449	0.440	0.464	0.364	0.326	0.483
DCA	5	696	0.236	0.152	0.206	0.098	0.232	0.221
IDL	5	1,311	0.192	0.242	0.211	0.180	0.124	0.244
OFF	5	693	0.371	0.292	0.342	0.296	0.344	0.249
RND	5	682	0.369	0.462	0.469	0.312	0.198	0.421
WRI	5	514	0.380	0.368	0.400	0.361	0.368	0.430
Mean	5	5,231	0.332	0.354	0.349	0.273	0.274	0.339
Percent improvement over pers			-	3.3	2.5	-8.8	-8.7	1.0
ACY	7	657	0.257	0.446	0.336	0.265	0.133	0.333
CEF	7	639	0.341	0.377	0.337	0.258	0.200	0.336
DCA	7	713	0.243	0.138	0.271	0.130	0.085	0.225
IDL	7	1,338	0.054	0.218	0.024	0.065	0.056	0.139
OFF	7	618	0.336	0.285	0.341	0.305	0.278	0.332
RND	7	682	0.239	0.360	0.285	0.252	0.118	0.362
WRI	7	517	0.392	0.347	0.422	0.324	0.311	0.367
Mean	7	5,164	0.266	0.317	0.288	0.235	0.168	0.299
Percent improvement over pers			-	6.9	3.0	-4.2	-13.4	4.5

(c) Composite of (a) and (b) for all stations and forecasts

No. of fcsts	Mean Heidke score					
	Pers	Subj	CEP	Group	Lund	MDA
31,372	0.420	0.449	0.425	0.393	0.350	0.446

TABLE 2-9
PERCENT IMPROVEMENT (I) OF HEIDKE SCORES FOR CATEGORICAL FORECASTS
RELATIVE TO PERSISTENCE FOR EVALUATION-YEAR DATA

Predictand		I, %				
Elem	Fcst length, hr	Subj	CEP	Group	Lund	MDA
CIG	2-3	-6.4	-0.3	-2.4	-28.7	5.1
	4-5	5.6	1.2	-4.0	-19.5	6.8
	6-7	15.3	1.2	-3.0	-11.5	9.2
VIS	2-3	1.3	-3.0	-4.6	-18.5	1.8
	4-5	3.3	2.5	-8.8	-8.7	1.0
	6-7	6.9	3.0	-4.2	-13.4	4.5
All predictands		5.0	0.9	-4.7	-15.5	4.5

TABLE 2-10
t-VALUES COMPARING THE MEAN HEIDKE SKILL SCORES FOR CATEGORICAL
FORECASTS RELATIVE TO PERSISTENCE FOR EVALUATION-YEAR DATA

Fcst length, hr	t-value				
	Subj	CEP	Group	Lund	MDA
2-3	-0.633	-1.222	-2.394	-5.234	0.971
4-5	1.310	1.345	-3.671	-4.303	1.600
6-7	3.258†	1.876*	-2.030	-5.633	3.447†
All	2.562†	1.131	-4.586	-8.633	3.340†

*Mean Heidke score is significantly higher than the mean for persistence at the 5% level.

†Mean Heidke score is significantly higher than the mean for persistence at the 1% level.

predictands, MDA and subjective are significantly better than persistence. A t-value was computed that compares the overall means of MDA and subjective, and it was found that the two mean scores do not differ by a significant amount.

The scores in Table 2-8 were averaged by station. The means, not presented here, indicate that the MDA technique scores are highest at Washington National, McGuire, and Westover; the subjective scores are highest at Atlantic City, Idlewild, and Randolph; and persistence is best at Offutt.

Values of t, comparing the technique mean scores with the persistence mean score, appear in Table 2-10.

2.2.3 Vernon Skill Score

The scores for 42 predictands for six forecast techniques are given in Table 2-11. The MDA scores were highest on 18 predictands, subjective was high on 14, and the high scores for the remaining 10 predictands are spread among the other forecast techniques. The overall means [part (c) of the table] show that subjective is slightly higher than MDA; there is a gap to CEP and persistence; and grouping and Lund trail. This is the same general result achieved by the Heidke skill scores.

Values of the index I were computed in the same manner as for the Heidke score. The results are given in Table 2-12. The subjective forecasts were high on four of the six cases and on the overall averages of the 42 predictands. In general, the improvement of subjective and MDA over persistence increases with increasing forecast length, and the improvement is larger for ceiling than for visibility.

Values of t are presented in Table 2-13. At 2-3 hr, none of the mean scores is significantly better than the mean score for persistence; only subjective and MDA mean scores are significantly better at 4-5 hr, 6-7 hr, and all hours combined. A t-test value was computed to compare the overall mean scores of subjective and MDA; the value is only 0.21, so there is no significant difference between the two mean scores.

The scores in Table 2-11 were averaged over stations. Subjective was higher at Atlantic City, Idlewild, and Randolph, whereas MDA was higher at the other four stations.

TABLE 2-11
VERNON-SCORE TEST RESULTS FOR CATEGORICAL FORECASTS
FOR EVALUATION-YEAR DATA

(a) Predictand element is cooling

Predictand		No. of fcsts	Vernon score					
Sta	Fcst length, hr		Pers	Subj	CEP	Group	Lund	MDA
ACY	3	681	0.664	0.655	0.677	0.623	0.466	0.676
CEF	2	650	0.696	0.730	0.754	0.747	0.696	0.772
DCA	3	541	0.615	0.580	0.609	0.623	0.461	0.622
IDL	3	1,283	0.690	0.688	0.692	0.682	0.467	0.686
OFF	2	694	0.747	0.639	0.741	0.750	0.610	0.755
RND	2	692	0.699	0.685	0.694	0.682	0.675	0.700
WRI	2	611	0.715	0.647	0.709	0.743	0.671	0.746
Mean	2-3	5,152	0.689	0.661	0.697	0.693	0.578	0.708
Percent improvement over pers			-	-9.0	2.6	1.3	-35.7	6.1
ACY	5	651	0.513	0.647	0.538	0.524	0.311	0.528
CEF	4	655	0.579	0.600	0.608	0.585	0.472	0.635
DCA	5	544	0.497	0.544	0.503	0.474	0.321	0.566
IDL	5	1,451	0.545	0.575	0.551	0.535	0.459	0.595
OFF	4	652	0.552	0.582	0.554	0.487	0.509	0.610
RND	4	680	0.478	0.609	0.485	0.454	0.416	0.488
WRI	4	519	0.577	0.561	0.588	0.606	0.536	0.648
Mean	4-5	5,152	0.534	0.588	0.548	0.524	0.432	0.581
Percent improvement over pers			-	11.6	3.0	-2.1	-21.9	10.1
ACY	7	676	0.405	0.559	0.427	0.463	0.257	0.476
CEF	6	669	0.456	0.597	0.510	0.491	0.416	0.573
DCA	7	581	0.373	0.514	0.417	0.374	0.383	0.510
IDL	7	1,452	0.438	0.561	0.430	0.442	0.445	0.447
OFF	6	664	0.487	0.478	0.465	0.376	0.386	0.520
RND	6	678	0.343	0.557	0.345	0.333	0.314	0.453
WRI	6	519	0.455	0.511	0.498	0.331	0.246	0.555
Mean	6-7	5,339	0.422	0.540	0.442	0.401	0.350	0.505
Percent improvement over pers			-	20.4	3.5	-3.6	-12.5	14.4

(b) Predictand element is visibility

Predictand		No. of fcsts	Vernon score					
Sta	Fcst length, hr		Pers	Subj	CEP	Group	Lund	MDA
ACY	3	699	0.470	0.485	0.461	0.408	0.343	0.455
CEF	2	682	0.682	0.722	0.660	0.735	0.365	0.772
DCA	3	609	0.414	0.404	0.344	0.365	0.400	0.384
IDL	3	1,336	0.506	0.559	0.513	0.403	0.497	0.516
OFF	2	694	0.590	0.532	0.597	0.558	0.550	0.512
RND	2	702	0.553	0.534	0.488	0.524	0.375	0.556
WRI	2	612	0.730	0.662	0.725	0.722	0.688	0.736
Mean	2-3	5,334	0.564	0.557	0.541	0.531	0.460	0.562
Percent improvement over pers			-	-1.6	-5.3	-7.6	-23.8	-0.5
ACY	5	663	0.234	0.324	0.258	0.229	0.248	0.222
CEF	4	672	0.564	0.555	0.578	0.526	0.368	0.580
DCA	5	696	0.244	0.199	0.239	0.173	0.225	0.238
IDL	5	1,311	0.376	0.414	0.402	0.314	0.253	0.437
OFF	4	693	0.513	0.439	0.507	0.438	0.485	0.503
RND	4	682	0.331	0.426	0.369	0.281	0.158	0.408
WRI	4	514	0.493	0.464	0.491	0.480	0.487	0.533
Mean	4-5	5,231	0.394	0.432	0.406	0.349	0.318	0.417
Percent improvement over pers			-	6.3	2.0	-7.4	-12.5	3.8
ACY	7	657	0.150	0.371	0.193	0.147	0.093	0.273
CEF	6	639	0.379	0.474	0.448	0.332	0.213	0.404
DCA	7	713	0.212	0.171	0.198	0.202	-0.017	0.210
IDL	7	1,338	0.277	0.435	0.256	0.246	0.167	0.323
OFF	6	618	0.431	0.322	0.373	0.369	0.267	0.426
RND	6	682	0.160	0.297	0.160	0.163	0.074	0.346
WRI	6	517	0.390	0.383	0.450	0.334	0.314	0.386
Mean	6-7	5,164	0.286	0.350	0.297	0.256	0.162	0.339
Percent improvement over pers			-	9.0	1.5	-4.2	-17.4	7.4

(c) Composite of (a) and (b) for all stations and forecasts

No. of fcsts	Mean Vernon score					
	Pers	Subj	CEP	Group	Lund	MDA
31,372	0.482	0.521	0.488	0.459	0.585	0.519

TABLE 2-12
PERCENT IMPROVEMENT (I) OF VERNON SCORES FOR CATEGORICAL FORECASTS
RELATIVE TO PERSISTENCE FOR EVALUATION-YEAR DATA

Predictand		I, %				
Elem	Fcst length, hr	Subj	CEP	CET	Lund	MDA
CIG	2-3	-9.0	2.6	1.3	-35.7	6.1
	4-5	11.6	3.0	-2.1	-21.9	10.1
	6-7	20.4	3.5	-3.6	-12.5	14.4
VIS	2-3	-1.6	-5.3	-7.6	-23.8	-0.5
	4-5	6.3	2.0	-7.4	-12.5	3.8
	6-7	9.0	1.5	-4.2	-17.4	7.4
All predictands		7.5	1.2	-4.4	-19.1	7.1

TABLE 2-13
t-VALUES COMPARING THE MEAN VERNON SKILL SCORES FOR CATEGORICAL
FORECASTS RELATIVE TO PERSISTENCE FOR EVALUATION-YEAR DATA

Fcst length, hr	t-value				
	Subj	CEP	Group	Lund	MDA
2-3	-1.45	-0.91	-1.28	-4.13	0.77
4-5	1.84*	3.37†	-3.15	-4.49	4.13†
6-7	3.44†	1.51	1.85*	-4.87	4.12†
All	2.78†	1.42	-3.46	-7.83	4.67†

*Mean Vernon score is significantly better than the mean for persistence at the 5% level.

†Mean Vernon score is significantly better than the mean for persistence at the 1% level.

3.0 STATISTICAL TECHNIQUES

Before the evaluation started, all the statistical techniques except multiple-discriminant analysis (MDA) had been applied to other forecast problems, and it was thought that they could be applied directly to forecasting ceiling and visibility. However, in the course of the evaluation, it was found that additional work was required on the climatological-expectancy-of-persistence (CEP) and grouping techniques; less work was required on the Lund technique. Some of the work done on the three techniques is presented in this section.

The MDA technique was developed during the course of the evaluation, and details are given in the monograph by Miller [10]. However, some further developmental work was done, and this is described briefly. Finally, there seem to be no references available on the Lewis technique, so a résumé is given below.

3.1 Climatological Expectancy of Persistence

Initially, a CEP forecast was considered to yield the conditional probability of the subsequent occurrence of class j of the predictand when given that class i of the predictand was observed. The development of this type of CEP technique consists in computing a single frequency-count table, such as Table 3-1. The value 79 in the first row is the number of times that ceilings below 200 ft at observation time were followed by ceilings below 200 ft 5 hr later. Other entries in the table have similar meanings. The conditional probabilities needed to make CEP forecasts are obtained by dividing each entry of Table 3-1 by its row total.

This type of CEP technique uses data from all seasons of the year and all hours of the day. To determine seasonal and diurnal influences on the CEP technique, frequency-count tables were computed for every even hour of six seasonal periods, January-February, March-April, etc. Thus, 24 tables were obtained for each predictand variable. An extensive investigation was conducted by combining various hours and seasons. It was found that there is a seasonal and a diurnal effect. However, it was also found that too fine a breakdown resulted in very small frequencies in some of the cells of the table and, thus, the corresponding conditional probabilities were not stable when applied to a new sample of data. Balancing these two factors, it was decided to stratify the dependent sample of 10 years (1949-1958) into two seasons (May-October and November-April) and then into two diurnal periods. The stratification yielded four sets of data, and for each set a forecast table was computed. A report presenting 448 such tables has been published [5].

3.2 Grouping

The grouping technique is similar to the CEP technique; the major difference is the use of four variables to specify the initial condition.

The grouping technique, as it was programmed for use in A Plan for the Test and Evaluation of Terminal Forecasting Techniques [11], has the following characteristics.

TABLE 3-1
FREQUENCY COUNT OF IDLEWILD CEILINGS*

Present ceiling C, ft	Class i	Ceiling class 5 hr later					Total
		1	2	3	4	5	
$C < 200$	1	79	112	54	46	145	436
$200 \leq C < 500$	2	134	368	249	191	330	1,272
$500 \leq C < 1000$	3	76	321	743	570	575	2,285
$1000 \leq C < 3000$	4	34	185	571	1,375	1,635	3,800
$2000 \leq C$	5	131	289	645	1,608	33,289	35,962

*Based on every other hour in 10 years beginning January 1949.

- (a) The predictors must be chosen from the elements of the standard hourly airways observations—as recorded on WBAN-10A and -10B.
- (b) Exotic predictors (i.e., predictors derived from combinations, averages, differences, etc., of the observational elements) may not be considered.
- (c) The number of predictors cannot exceed four.
- (d) The grouping or categorization of the predictand element is specified by the test plan.
- (e) Selected predictors must be categorized into not more than eight groups.
- (f) The predictors must be listed in order of importance.
- (g) The total data sample that can be handled by the program is 6000 hr of data.

Since there are approximately 10 stations in a predictor network, with about 13 observational elements at each station, the subjective selection of predictors involves a choice of four observational elements out of a possible 130, or the selection of one permutation of four elements out of 272,000,000 possible permutations.

Predictors and categories of predictors were selected subjectively through the use of physical and synoptic reasoning, supported by considerable experimentation. It is not practical to present here a total description of the final selection of predictors. However, one of the many experiments conducted is described below as an example of how the basic output of the grouping programs was used to check the validity of the predictor selection—and to point up some of the problems involved.

Table 3-2 is a crude attempt at combining the concepts of synoptic typing and advection of the predictand element. It is expected that northerly winds at IDL will describe a generally southward flow over the area and should emphasize persistence of category 5 at IDL or improvement of lower categories. Values of the north-south component of wind (VWC) at IDL between N2.5 and S2.5 with low values of ceiling (CIG) at NEL should imply westward flow and emphasize persistence of lower categories of CIG-IDL or deterioration indexed by CIG-NEL. Similarly, values between N2.5 and S2.5 at IDL with moderate to high values of CIG-NEL will imply an eastward flow and emphasize CIG-TEB as an index of CIG-IDL. There are, of course, a number of weaknesses in this reasoning—for example, the assumption of an eastward or westward flow with low values of VWC-IDL. Obviously, there will be occasions when low values of VWC-IDL reflect light winds, with the CIG-NEL and CIG-TEB reflecting radiation effect.

It is of some interest to consider the tabular output of the grouping program first from the standpoint of the information contained and as a check of the validity of the basic reasoning underlying the choice of predictors.

From the dependent data (4000 observations), Table 3-3 is obtained for the use of persistence alone as a predictor for a 2-hr forecast. Table 3-3 exhibits three basic facts quite well known to all practicing forecasters:

TABLE 3-2
PREDICTORS CHOSEN FOR 2-hr CEILING FORECAST AT IDLEWILD

Predictors in order of selection	Grouping						
	1	2	3	4	5	6	7
CIG-IDL	<200	<500	<1000	<3000	<Unl	Unl	-
VWC-IDL	>N15.5	>N10.5	>N2.5	<S2.5	<S10.5	<S15.5	>S15
CIG-NEL	<200	<500	<1000	<5000	<Unl	Unl	-
CIG-TEB	<200	<500	<1000	<5000	<Unl	Unl	-

TABLE 3-3
SINGLE PREDICTOR: PERSISTENCE

		Observed category* 2 hr later					Total
		1	2	3	4	5	
Initial category*	1	7	14	2	8	6	37
	2	17	57	20	18	18	130
	3	2	33	111	53	36	235
	4	0	5	63	244	145	457
	5	4	11	22	123	1467	1627
	6	1	4	5	17	1487	1514
Total		31	124	223	463	3159	4000

*The category limits are given in Table 3-2.

(a) For all categories except category 1 ($CIG < 200$ ft), the probability of persistence exceeds the probability of any other single category.

(b) The probability of improvement is in general considerably better than the probability of deterioration.

(c) The probability of $CIG < 3000$ ft with an initially unlimited ceiling is extremely low.

More specifically, the dependent data result in the probabilities in Table 3-4. The use of the V-wind component at IDL at time zero as a predictor of ceiling at +2 hr yields Table 3-5.

If we consider three possible wind categories,

(a) $N = (N > 2)$,

(b) $C = (\leq N2 \text{ to } \leq S2)$, and

(c) $S = (> S2)$,

the relative frequencies at +2 hr are given in Table 3-6. It is interesting to note the high relative frequency of category-4 ceiling (i.e., $1000 \text{ ft} < CIG < 3000 \text{ ft}$) with northerly wind. This probably reflects the tendency for cumulus and stratocumulus to base around 2500 ft in unstable southward flow, which is so familiar to the practicing forecaster. Also strongly evident is the obscuring effect of the catch-all category 5. The climatic expectancy of category-5 ceiling is about 0.82. Although there appears to be considerable information in VWC-IDL as a single predictor, its utility is very limited.

In the initial proposal above, it is suggested that category-4 VWC (i.e., $N2.5 > VWC < S2.5$) would be assumed to imply an easterly flow if $CIG-NEL$ was low. Further, it is proposed that in this event the tendency at IDL would be toward deterioration indexed by $CIG-NEL$. Extraction of data from the table formed of the three variables $CIG-IDL$, $VWC-IDL$, and $CIG-NEL$ yields Table 3-7.

It appears therefore that the proposed assumption is essentially valid. However, we must first question the value of the VWC predictor in this relationship and check the relative frequency distribution when the two CIG values are used alone. Extraction of data from the two-variable table yields Table 3-8. Comparison of Tables 3-7 and 3-8 row for row appears to support the initial proposal.

If now the attempt is made to use the four-variable table to test the validity of the initial assumptions more completely, the scarcity of data at once defeats the attempt. When the available data are squeezed to form the basis of a tentative conclusion, the scarcity of data prohibits even this. Table 3-9 exemplifies the futility of such an attempt. It is therefore hardly surprising that the use of these predictors failed to yield satisfactory results.

TABLE 3-4
PROBABILITIES FOR IOLEWILD 2-hr CEILINGS

Initial category	Probability of deterioration	Probability of persistence	Probability of improvement
1	-	0.19	0.81
2	0.13	0.44	0.43
3	0.15	0.47	0.38
4	0.15	0.53	0.32
5	0.10	0.90	-
6	0.02	0.98	-

TABLE 3-5
SINGLE PREDICTOR: VWC

		Observed CIG category 2 hr later					Total
		1	2	3	4	5	
Initial CIG category	1; > N15	0	0	10	30	103	143
	2; > N10	1	4	37	69	220	331
	3; > N2	2	30	62	135	784	1013
	4; < N2, < S2	12	31	35	86	558	722
	5; > S2	10	35	53	97	1079	1274
	6; > S10	4	12	18	24	305	363
	7; > S15	2	12	8	22	110	154
Total		31	124	223	463	3159	4000

TABLE 3-6
SINGLE-PREDICTOR (VWC) PROBABILITIES

		Observed category 2 hr later					Total
		1	2	3	4	5	
Initial category	N	0.005	0.023	0.074	0.158	0.743	1477
	C	0.017	0.043	0.048	0.119	0.772	722
	S	0.009	0.027	0.044	0.080	0.834	1791

TABLE 3-7
THREE-PREDICTOR PROBABILITY TABLE

Initial category			Observed category at IDL 2 hr later					Total
CIG-IDL	VWC-IDL	CIG-NEL	1	2	3	4	5	
3	C	≤ 3	0	0.21	0.48	0.28	0.03	29
		> 3	0	0.00	0.33	0.25	0.42	12
4	C	≤ 4	0	0.00	0.14	0.58	0.28	50
		> 4	0	0.00	0.10	0.38	0.52	21

TABLE 3-8
TWO-PREDICTOR PROBABILITY TABLE

Initial category		Observed category at IDL 2 hr later					Total
CIG-IDL	CIG-NEL	1	2	3	4	5	
3	≤ 3	0.01	0.10	0.53	0.25	0.10	155
	> 3	0.00	0.10	0.41	0.20	0.28	70
4	≤ 4	0.00	0.01	0.16	0.59	0.25	349
	> 4	0.00	0.00	0.06	0.35	0.58	108

TABLE 3-9
FOUR-PREDICTOR CONTINGENCY TABLE
GIVEN $N2.5 > VWC$, $IDL < S2.5$

Initial value			CIG-IDL 2 hr later					Total
CIG-IDL	CIG-NEL	CIG-TEB	1	2	3	4	5	
2	1	3-6	1	4	1	0	0	6
	3-6	2	1	0	1	0	0	2
3	2-1	4-6	0	1	2	0	0	3
	4-6	2-1	0	0	0	1	1	2

3.3 Lund Technique

The Lund technique is described in an article by Lund [8]. Because of the limited number of previous applications, some experimentation was done as part of the evaluation. The dependent sample of 10 years was separated into two parts. The first part was used to develop the technique, and forecasts were made on the second part.

It was found that:

(a) Some meteorological elements (pressure for example) were never selected by the technique as a predictor of ceiling and visibility. Therefore, these elements were not considered as possible predictors in the evaluation.

(b) The χ^2 -criterion did not halt the selection of predictors soon enough. Therefore, it was decided to select the first five predictors for each predictand.

(c) The equations and computation methods in Lund's article [8] were not the most efficient for machine computation. So the form of the equations was changed to facilitate computation.

3.4 Multiple-discriminant Analysis

A description of MDA procedures has been presented in technical detail by Miller [10]. An elementary description is given by Enger [6]. After these publications were prepared, extensive studies were undertaken toward improvement of MDA. A summary of these studies follows.

3.4.1 Metric for the Discriminant Space

Defining the metric is crucial in the Fix-Hodges nonparametric procedure for estimating group probabilities by distance-neighborhood [10]. Over the past year, a great deal of effort has been directed toward experimenting with various metrics. The one presently employed (giving each discriminant function a variance equal to its corresponding root) has proven to be the best when judged on the basis of P-score and hits.

3.4.2 Neighborhood Size

Group probabilities are estimated by the Fix-Hodges procedure of distance-neighborhood [10]. The question arises as to how large a neighborhood should be. After much experimentation, it was decided that validity and sharpness of the probabilities were best served by requiring a neighborhood to be large enough to include half the number of observations in the least frequented group, but not less than 25 in order to afford stability.

3.4.3 Test on the Roots

The contribution of each discriminant function to the separation of the predictand groups is reflected in the corresponding roots. In theory, the significance of each root can be ascertained, provided that the group distributions are multivariate-normal with equal dispersions. In practically all applications of MDA made to date, these assumptions cannot be satisfied. Much effort has been spent in trying to decide the effectiveness of the Bartlett test procedure [10] for determining the significance of the roots. The present state of affairs is that all possible discriminant functions are always used. The controlling factor rests in the construction of the metric since each discriminant function is given a variance equal to its root. Thus, a discriminant function with a small root has less effect on deciding which are the close-neighbor observations.

3.4.4 Centroid Method

The classical MDA procedure for making a categorical prediction is to choose the group whose mean in discriminant space is nearest the point representing the current observation of antecedent conditions. This is termed the nearest-centroid method. It is the appropriate procedure if the group distributions are multivariate-normal with equal dispersions. It is also appropriate under slightly more general conditions. An effort was made to apply the nearest-centroid method to problems in ceiling prediction even though they were known not to be distributed normally. The results proved to be somewhat inconsistent with the probability estimates obtained from distance-neighborhood, and the procedure was subsequently abandoned.

3.4.5 Weight Function Applied to Neighbors

When a neighborhood is constructed about an observed point in discriminant space, it seems reasonable to give more weight to the closer observations than to the more distant observations. This seems especially important should the neighborhood be very large. An attempt was made to introduce an exponential weight function, $\exp(-aD^2)$, to have the effect of damping the more distant points (D being the distance and a being a constant to be determined). Professor A. T. James, by verbal communication in consultation on this problem, theorized the value of a to be 16 for the particular problem used in the experiment. The experimental results confirmed that this was, in fact, the best of the many values tried. The improvement was gratifying; however, more work needs to be done before it can become part of the general MDA program.

3.4.6 Equal Group Sizes

A sample was constructed which gave each group an equal representation. This was performed by discarding observations in the ordinarily more frequented groups. Selection was performed, using this sample. Parameter estimates (means, variances, roots, and vectors) were estimated on a sample in which the group frequencies were as they occur naturally. Results on independent data were inferior to those where selection was performed without equal group sizes. This was contrary to previous experiments of this type [10]. Perhaps the numerous innovations introduced since the initial experiments caused this apparent inconsistency.

3.4.7 Time Lags

A very limited experiment was performed to determine the contribution made by including observations prior to those at forecast time. The results were not encouraging. A more comprehensive effort is anticipated, which will deal explicitly with time changes in the predictors.

3.4.8 Test on the Selection Criterion

Although a test procedure has been laid down for judging the significance of a newly selected predictor [10], much effort has gone into confirming or denying its validity. At present, it can at least be said to be providing satisfactory guidelines on when to discontinue selecting variables. There is, however, a difficulty in prescribing the precise number of degrees of freedom available in any given problem because of serial correlation.

3.4.9 Factorial Procedure for Objectively Dummying Predictors

Each raw predictor was initially divided into two classes. A dummy variable was constructed to denote the occurrence or nonoccurrence of each class. The selection of predictors was performed on the type of dummy variables generated. For all those selected, a more detailed division of classes was employed. This routine is akin to generating more levels on each factor as in factorial experiments in the analysis of variance. The routine is iterative—select and then construct more levels. One additional consideration is made: interaction terms are generated from those dummies selected by constructing all intersections, unions, and complements. To date, only one experiment has been performed according to this procedure. More work is expected to be done.

3.4.10 Boolean Terms

When each available predictor is in dummy-variable form, the way is open to construct an unlimited number of "and," "or," and "not" variables. A program giving us this flexibility is now available. Tests performed thus far are quite encouraging; however, much more work needs to be done on this subject.

3.4.11 Dummy-variable and Continuous-variable MDA Programs

A discussion is given by Enger [6] of the construction and practical advantages of dummy variables. We have written an MDA program to handle dummy variables optimally. There has also been written an MDA program to handle continuous variables. Specifications of these two available programs are given in Table 3-10.

3.4.12 Use of Independent Observations to Estimate Probabilities

Given a sample of observations from which to select predictors and estimate parameters (means, variances, roots, and vectors), it seemed reasonable to introduce a new sample from which probability estimates could be made. The assumption was that the distribution of points in discriminant space would thereby be unbiased. An

TABLE 3-10
SPECIFICATIONS OF TWO AVAILABLE PROGRAMS

Program	Max. no. of groups	Max. no. of data sample (dep. and indep.)	Max. no. of possible predictors	Mode of estimating probabilities	Selection- test criterion	Loss-function classification option?
MDA dummy variable	30	10,008	500	Fix-Hodges nonparametric	$\text{tr } W^{-1}B$	Yes
MDA continuous variable	30	4,000	Unlimited	Fix-Hodges nonparametric	$\text{tr } W^{-1}B$ or Wilk's λ	No

experiment failed to justify the need for performing this two-stage operation. The results, on a new independent sample, were better when the group probabilities were estimated from the initial "biased" sample. Since this might be attributable to the necessary depletion of sample observations, it seems advisable that more work be done on this matter.

3.4.13 Preliminary Operational Tests of MDA Forecast Tables

A test of the usefulness of MDA forecast tables was conducted under routine operational conditions between June 27 and July 27, 1962. During this time, forecasts of ceiling and visibility for 2, 3, 4, and 6 hr were made routinely for Westover AFB (CEF), using the facilities of the TRC Forecast Section and the MDA forecast tables for CEF. A complete description of this test and the results obtained were presented at the Fourth Conference on Applied Meteorology [9]. It was found that a set of predictions could be prepared routinely in a matter of a few minutes. In addition, it was subjectively decided that the MDA probabilities contained an appreciable amount of information over and above that of persistence. This appraisal was confirmed when a comparative evaluation of the MDA predictions versus persistence was performed [7].

MDA forecast tables were also provided to forecasters at Weather Bureau airport stations in Atlantic City and Washington, D.C., in August.

A sample MDA forecast table with three predictors is shown as Table 3-11. A forecast is made by entering the table with the observed predictor combination and reading off the five probabilities. In the test and evaluation, 48 such tables were computed.* The number of zero-one variables selected varied from seven to 29, and the number of rows in the tables ranged from 80 to 2200.

3.4.14 Nonparametric Binary Selection

Miller has expressed great hope [2] for a method called nonparametric binary selection. Although the arguments presented for the need for such a procedure still apply, he found much more research work was required before it could be engineered into a useable form. It still remains a method that deserves serious consideration in the future.

3.4.15 Regression Within Groups

Multiple-regression techniques have been expected to perform the statistical prediction of continuous variables. However, knowledge gained in the use of MDA on discrete variables suggested that methods more powerful than regression might be devised. These fall into two categories: canonical correlation and a combination of regression and discriminant analysis. In a pilot study, it was found that by grouping the continuous variable temperature and subjecting it to MDA, we were able to estimate the probability that a sub-

*Too lengthy for inclusion here, copies are available from The Travelers Research Center, Inc., 650 Main St., Hartford, Conn.

TABLE 3-11
MDA FORECAST TABLE WITH THREE PREDICTORS

Predictor combination	Forecast probability of predictand category				
	1	2	3	4	5
0 0 0	0.000	0.000	0.204	0.463	0.333
0 0 1	0.200	0.400	0.267	0.044	0.089
0 1 0	0.543	0.152	0.152	0.087	0.065
0 1 1	0.000	0.089	0.156	0.111	0.644
1 0 0	0.178	0.289	0.333	0.111	0.089
1 0 1	0.044	0.111	0.178	0.267	0.400
1 1 0	0.000	0.000	0.023	0.068	0.909
1 1 1	0.000	0.111	0.111	0.178	0.600

sequent temperature would fall in any particular group. By getting the sum of the products of the temperature estimated in each group and the corresponding probability of group membership, a single temperature estimate was made having a smaller rms error on independent data than that obtainable by straight multiple regression. Follow-up studies were not as successful—probably because a number of modifications were introduced.

3.5 Lewis Technique

The steps involved in the Lewis technique are:

(a) Up to 26 possible predictors are categorized into groups according to pre-specified class limits.

(b) Up to 10 tables, such as Table 3-12, are computed.

(c) Table 3-12 is called a two-way table because there are two predictors. The maximum number of two-way tables is six.

(d) A three-way table is one whose general element is $\bar{Y}_{ijk}$, obtained by finding all cases in the dependent sample for which predictor D is in class i, predictor E is in class j, and predictor F is in class k. For these cases, the mean of the predictand is obtained. A maximum of two three-way tables is computed.

(e) A four-way table is defined by extension of the explanation just above. The maximum number is also two.

(f) A variable X_1 is generated as follows: Table 3-12 was obtained by using predictor A and predictor B. The first A-value and the first B-value in the dependent sample of data are used to locate a box in Table 3-12. The first value of X_1 is set equal to the $\bar{Y}$ of this box. This process is repeated for the entire dependent sample.

(g) A variable X_2 is generated in a similar fashion by using the second table with its predictors.

(h) This process is repeated for all tables. Since a maximum of 10 tables was made (six two-way, two three-way, and two four-way), there will be a maximum of 10 X-variables.

(i) A multiple-screening regression is done between the predictand and the X-variables just generated. This will result in a regression equation

$$\hat{Y} = B_0 + B_1 X^{(1)} + B_2 X^{(2)} + \dots, \quad (3-1)$$

where the superscripts refer to the X-values selected by the screening. In general, not all X-variables will be selected. The tables used to generate the selected X-variables are retained, but no other tables are retained.

(j) The regression equation is used to compute residuals, $Y - \hat{Y}$, for all dependent-sample cases.

TABLE 3-12
EXAMPLE OF TABLE USED IN LEWIS TECHNIQUE*

Predictor A class	Predictor B class			
	1	2	3	4
1	$\bar{Y}_{11}$	$\bar{Y}_{12}$	$\bar{Y}_{13}$	$\bar{Y}_{14}$
2	$\bar{Y}_{21}$	$\bar{Y}_{22}$	$\bar{Y}_{23}$	$\bar{Y}_{24}$
3	$\bar{Y}_{31}$	$\bar{Y}_{32}$	$\bar{Y}_{33}$	$\bar{Y}_{34}$

*The general entry $\bar{Y}_{ij}$ is obtained by finding all cases in the dependent sample of data when predictor A is in class i and predictor B is in class j. For these cases, the mean of the predictand is obtained.

(k) Steps (b) through (j) are repeated, with the residuals being used in place of the predictand values. This results in a second set of tables' being retained and a second regression equation

$$\hat{R} = C_0 + C_1 X^{(a)} + C_2 X^{(b)} + \dots, \quad (3-2)$$

where the superscripts refer to the X-values selected by this screening.

(l) Steps (b) through (k) are repeated until the screening regression indicates no further reduction of variance or until a prespecified number of tables has been selected.

(m) The tables retained in the steps above are used to make predictions on an independent sample of data. A prediction is made by entering the retained tables to read off values of $X^{(1)}$, $X^{(2)}$, ..., $X^{(a)}$, $X^{(b)}$, ..., and any other set of predictors that are obtained by further repetitions of steps (b) through (l). The X-values thus obtained are used in the regression equations to compute $\hat{Y}$, $\hat{R}$, etc. These may be added to obtain the final prediction. It is also possible to take into consideration the initial value of the predictand when making forecasts.

4.0 SUBJECTIVE FORECASTS USED IN TESTS

4.1 Types of Forecasts

Table 4-1 lists the terminals, types of forecasts and dates for which forecasts were available. Details of contents of FT1s and FT2s can be found in the Weather Bureau Manual, vol. III, Chap. B-21; contents of TAFORs and PLATFSs can be found in Air Weather Service Manual 105-24, Aeronautical Meteorological Codes; contents of SAGE forecasts can be found in NORAD Manual 55-3, Hq. North American Air Defense Command, Ent AFB, 1 Feb. 1961.

Subjective probability forecasts are not routinely prepared in the existing weather system. The 433L Forecast Evaluation Working Group solicited and received the help of the United States Weather Bureau in acquiring this kind of forecast. Weather Bureau forecasters at Idlewild International Airport and Washington National Airport participated in this experiment during the evaluation year. They were requested to prepare 3-, 5-, and 7-hr forecasts of categories of ceiling and visibility four times daily.

4.2 Parameters Decoded

All parameters normally included in the forecasts were decoded at The Travelers Research Center. The only exceptions were the FT1s for Atlantic City. These were received in a decoded form in which only ceiling and visibility had been decoded. The decodes of all parameters were available on punched cards, but for the evaluation, ceiling and visibility forecasts were available on magnetic tape. Details of the format are available. Decoded forecasts of ceiling and visibility were placed on three tapes. On the first tape are forecasts for Washington National Airport (FT1), Atlantic City (FT1), Idlewild International Airport (FT1), Westover AFB (TAFOR), Offutt AFB (TAFOR), McGuire AFB (TAFOR), and Randolph AFB (PLATFS). The second tape contains forecasts for McGuire AFB (SAGE). The third tape contains the special subjective probability forecasts for Idlewild and Washington National Airports.

4.3 Decoding Procedures

Ground rules for decoding of all parameters that were decoded are available from The Travelers Research Center. The terminal-forecast evaluation included only forecasts of ceiling and visibility; consequently only the ground rules that apply to these parameters are listed below.

(a) Whenever possible, applicable, or necessary, forecasts were linearly interpolated.

(b) If two ceiling layers were forecast, the lower was used.

(c) Whenever multiple cloud layers were forecast, it was assumed that the amount forecast for each layer was the amount expected at each level and not a summation of clouds up to respective levels.

TABLE 4-1
TERMINALS AND TYPES OF SUBJECTIVE FORECASTS

Terminal	Type of fcst	Dates available
Atlantic City Airport	FT1	1 Jul 60 - 30 Sep 61
Idlewild International Airport	FT2 special prob fcsts	1 Oct 60 - 30 Sep 61; 1 Jul 60 - 30 Jun 61; 1 Aug 61 - 30 Sep 61
McGuire AFB	TAFOR	1 Oct 60 - 31 Mar 61; 21 May 61 - Sep 61
	SAGE	1 Jun 60 - Sep 61
Offutt AFB	TAFOR	1 Jul 60 - 30 Sep 61
Randolph AFB	PLATFS	1 Jul 60 - 30 Sep 61
Washington National Airport	FT2 special prob fcsts	1 Jul 60 - 30 Sep 61 14 Sep 60 - 30 Sep 61
Westover AFB	TAFOR	1 Jul 60 - 31 Oct 61

(d) Ceiling was defined as it appears in the Manual of Surface Observations (W'BAN), Circular N, 11402 and Table 1-11.

(e) All visibility forecasts of more than 7 mi were normalized at 7.5 mi; i.e., they were given the value 62 as found in code 84 of the Hydrographic Office publication no. 206, dated 1958.

(f) When the ceiling was forecast to be caused by a surface-based obscuration, the ceiling height was defined as the vertical visibility.

(g) Interpolation between a ceiling resulting from a surface-based obscuration and a subsequent ceiling resulting from a cloud layer was an interpolation between vertical visibility in the obscuring phenomenon and the subsequent cloud height.

(1) When it could be reasonably assumed that fog had lifted to form the subsequent cloud layer, a linear interpolation between the end-point values of the time interval was used.

(2) When it was more reasonable to assume dissipation of the obscuring phenomenon, the ceiling represented by the vertical visibility was used to characterize the time interval with a single-step change at the end of the time interval.

(h) Ceiling and visibility changes associated with FROPA passage were assumed to be instantaneous.

(i) When a PLATFS forecast had thin broken or thin overcast becoming broken or overcast at the forecast time, the final condition was assumed to have occurred instantaneously.

(j) Forecasts of temporary, occasional, and intermittent conditions were omitted.

5.0 DESCRIPTION OF FINAL DATA ON IBM TAPE

Standard hourly airways surface observations covering the 10 years from 1 Jan. 1949 through 31 Dec. 1958 were collected and processed as part of the evaluation. The end product is a set of seven IBM 7090 magnetic tapes, one for each of the station networks listed in Table 2-2 of the main body of this report [7]. Because these data may be of use in other work, a brief description of the tapes is given below.

5.1 Amount of Data

There are 10 or 11 stations in a network, and, generally, 16 meteorological elements were used at each station. The hour of the day and the day of the year were included as variables. Thus, for a 10-station network, there are 162 variables.

There are 87,672 hr in the 10 years from 1949 through 1958 and, therefore, more than 14,000,000 ($162 \times 87,672$) data values in one network. This is too many to use efficiently; besides, not all hours are needed because of the serial correlation present in meteorological variables. The amount of data was reduced by a three-stage process:

(a) Any variable not observed for a substantial portion of the 87,672 hr was eliminated.

(b) Those hours were eliminated for which any one of the variables was missing or failed to pass a gross-error check.

(c) A random selection of the remaining hours was made to select from 8,000 to 10,000 hr.

Two records are on tape for each variable: an identification record consisting of a five-word description and a data record of from 8,000 to 10,000 values of one element at one station.

5.2 Variables on Magnetic Tape

From the information appearing on WBAN-10, it was found convenient to use the 16 variables following in the form indicated below.

5.2.1 Ceiling (CIG)

Ceiling values are stratified into 19 classes as shown in Table 5-1.

5.2.2 Visibility (VIS)

Visibility values are stratified into 19 classes as shown in Table 5-2.

TABLE 5-1
CEILING CLASSES

Tape value	Ceiling, ft
1	0 = CIG
2	100 = CIG
3	200 = CIG
4	300 = CIG
5	400 = CIG
6	500 = CIG
7	600 = CIG
8	700 = CIG
9	800 = CIG
10	900 = CIG
11	1,000 ≤ CIG < 1,500
12	1,500 ≤ CIG < 2,000
13	2,000 ≤ CIG < 2,500
14	2,500 ≤ CIG < 3,000
15	3,000 ≤ CIG < 5,000
16	5,000 ≤ CIG < 10,000
17	10,000 ≤ CIG < 20,000
18	20,000 ≤ CIG < Unl
19	Unl = CIG

TABLE 5-2
VISIBILITY CLASSES

Tape value	Visibility, mi
1	0 ≤ VIS < 1/16
2	1/16 ≤ VIS < 1/8
3	1/8 ≤ VIS < 1/4
4	1/4 ≤ VIS < 1/2
5	1/2 ≤ VIS < 3/4
6	3/4 ≤ VIS < 1
7	1 ≤ VIS < 1-1/2
8	1-1/2 ≤ VIS < 2
9	2 ≤ VIS < 3
10	3 ≤ VIS < 4
11	4 ≤ VIS < 5
12	5 ≤ VIS < 6
13	6 ≤ VIS < 7
14	7 ≤ VIS < 8
15	8 ≤ VIS < 9
16	9 ≤ VIS < 10
17	10 ≤ VIS < 11
18	11 ≤ VIS < 15
19	15 ≤ VIS

5.2.3 Two Wind Components (UWC, VWC)

UWC is the east-west component of the wind and is given on tape in knots to the nearest tenth; a positive value indicates a westerly component.

VWC is the north-south component of the wind and is given on tape in knots to the nearest tenth; a positive value indicates a southerly component.

5.2.4 Wind Velocity (WND)

The wind velocity is on tape in the form Dfff, where fff is the speed in knots and D is the direction coded as shown in Table 5-3.

5.2.5 Dry-bulb and Dew-point Temperatures (DBT, DPT)

Dry-bulb and dew-point temperatures are in degrees Fahrenheit to the nearest degree.

5.2.6 Relative Humidity (RLH)

Relative humidity is in percent.

5.2.7 Sea-level and Station Pressures (SLP, STP)

Sea level pressure is in millibars to the nearest tenth.

Station pressure is in inches to the nearest hundredth.

5.2.8 Sky Condition Lower (SCL)

This is the amount of sky covered by the lowest cloud layer and it is coded as shown in Table 5-4.

5.2.9 Total Cloud Amount (TCA)

Total cloud amount is in eleven classes, as shown in Table 5-5.

5.2.10 Four Weather Variables

The weather was transformed to four variables: three binary variables and one variable made with prime numbers. A binary variable takes on the value 1 when a weather condition exists; otherwise it is 0. The three binary variables are precipitation, restrictions to visibility, and stability as observed from weather at the ground.

The weather conditions for generating the three binary variables are shown in Table 5-6. The fourth weather variable is a description of the weather as given in Table 5-7. If more than one weather condition occurred at a given hour, the product of the corresponding prime numbers is used to describe the weather. Prime numbers have the advantage that the product of primes is a unique value decomposable into the values used to generate it.

TABLE 5-3
WIND-DIRECTION CODES

Code value	Direction
0	Calm
1	NNE-ENE
2	E
3	ESE-SSE
4	S
5	SSW-WSW
6	W
7	WNW-NNW
8	N

TABLE 5-4
SKY-CONDITION-LOWER CLASSES

Tape value	Condition
1	Clear
2	Thin scattered or partial obscuration
3	Scattered or thick scattered
4	Thin broken
5	Broken or thick broken
6	Thin overcast
7	Overcast or thick overcast
8	Obscuration

TABLE 5-5
CLOUD-AMOUNT CLASSES

Tape value	Cloud amount, tenths of sky covered
1	< 1
2	1
3	2
4	3
5	4
6	5
7	6
8	7
9	8
10	9
11	> 9

TABLE 5-6
WEATHER CONDITIONS FOR GENERATING BINARY VARIABLES

Class	Elements
Precipitation	R-, R, R+, RW-, RQ-, RW, RQ, RW+, RQ+, L-, ZL-, L, ZL, S-, SP-, IC-, SG-, S, SP, IC, SG, St, SP+, IC+, SG+, SW-, SQ-, SW, SQ, SW+, SQ+, ZR-, E-, EW-, ZR, E, EW, ZR+, Et, EW+, A-, AP-, A, AP, At, AP+
Restriction to visibility	R+, RW+, RQ+, S, SP, IC, SG, St, SP+, IC+, SG+, SW, SQ, SW+, SQ+, F, IF, K, H, KH, D
Measure of stability	RW-, RQ-, RW, RQ, SW-, SQ-, SW, SQ, SW+, SQ+, TQ, T+, Q+, TOR, Q-, A-, AP-, A, AP, At, AP+, BD, BN, BS, BY

TABLE 5-7
WEATHER-DESCRIPTION CLASSES

Tape value	Weather event
1	None
2	R-
3	R
5	R+
7	RW-, RQ-,
11	RW, RQ
13	RW+, RQ+
17	L-, ZL-
19	L, ZL
23	L+, ZL+
29	S-, SP-, IC-, SG-
31	S, SP, IC, SG
37	S+, SP+, IC+, SG+
41	SW-, SQ-
43	SW, SQ
47	SW+, SQ+
53	TQ
59	T+, Q+, TOR
61	Q-
67	ZR-, E-, EW-
71	ZR, E, EW
73	ZR+, E+, EW+
79	A-, AP-
83	A, AP
89	A+, AP+
97	F, IF
101	GF
103	BO, BN, BS, BY
107	K, H, KH, D

5.2.11 Time of Day (TOD)

Time of day is an integer from .00 to .23 giving the hour of observation.

5.2.12 Day of Year (DOY)

Day of year is an integer from 1 through 365 giving the day of observation. The year is not given.

6.0 SOME RESTRICTIONS ON THE SUBJECTIVE CHOICE OF PREDICTORS

A number of variables were excluded from consideration in the statistical prediction techniques. The reasons for these restrictions are given below.

6.1 Restrictions Due to Use of Hourly Airways Observations Only

The design of the Common Aviation Weather System requires that short-period terminal forecasts be produced operationally every hour. The only data readily available every hour are the airways observations, so predictors were restricted to this set. Thus, no upper-air observational data were used in the development of any of the statistical forecast methods. In addition, some variables observed from the surface were excluded, e.g., radar and snow cover.

6.2 Restrictions Due to Requirement of Long Historical Records

A reasonably long historical series of readily available data is required for the development of the forecast techniques used in this test and evaluation. We decided arbitrarily that 10 years was a reasonable period and, therefore, we restricted the variables to those observed for the 10 years (1949-1958) and available from Asheville on magnetic tape. Because the statistical techniques are being developed with a view toward placing one or more of them into operation, an additional restriction was that the stations chosen still be in operation and expected to remain in operation for the foreseeable future.

In the formation of the network-data samples [7, Sec. 2.4.1], an error in any one of the variables at any station disqualifies all variables for that hour. Therefore, observational elements containing a high percentage of errors were excluded in order to form data samples of acceptable size. It was not feasible economically to go back and attempt to fill in or correct missing or erroneous observations. Examples of variables excluded are amount, type, and height of lowest and second cloud layers at various stations.

6.3 Restrictions Due to Use of Observed Variables Only

At the outset of this work, a decision was made to restrict the predictors to observed variables. Thus, no variables generated by taking time or space derivatives were permitted, nor were combined terms such as advection of a variable by some function of the wind. Several reasons prompted this decision. First, in some previous work, we found that when simple variables and "exotic" variables were presented together to a screening technique, only the simple variables were selected, or, if exotic variables were selected, a replacement by simple variables did as well. Second, although it is true that some predictive information will be lost if an exotic variable is a good predictor, it is also true that it is quite difficult to choose subjectively the proper exotic variables because this requires a subjective weighting of variables. That is, a pressure-gradient term is approximated by a simple pressure difference, $p_1 - p_2$; this gives weights of 1 and -1 to the two pressure variables, but we feel that it is better to leave the data free to apply the weights. Third, there are errors of observation in most variables, and exotic variables tend to have larger errors. Fourth, to determine whether

exotic variables add predictive information, it is necessary to know how good the simple variables are by themselves. We intend to try to improve the multiple-discriminant analysis (MDA) method by introducing exotic variables in addition to the simple variables selected by the technique. Fifth, using the principle of Occam's razor, other things being equal, a simpler solution to a problem is preferred to a more complicated solution.

6.4 Restrictions Due to Number of Possible Predictors

IBM 7090 programs were written to compute the required forecast equations and tables for the various statistical forecast techniques. The grouping program restricted the number of predictors to four. (The reasons for this restriction and its effects are presented in Section 3.3.) Because of cost, the Lund technique was restricted to 50 possible predictors, and the MDA technique was restricted to 500 binary predictors. On the average, there are five binary variables for each raw variable, so MDA was restricted to some 100 possible raw predictors. The possible predictors for both the Lund and MDA techniques are presented in Appendix B.

This limitation on the maximum number of possible predictors to 50 or 100 was met in two ways. First, the network of stations was restricted to a maximum of 11 stations. We chose the stations by estimating the distance that a meteorological element could be advected. Thus, for 2--7-hr ceiling and visibility prediction at Idlewild, the outer ring of stations was less than 200 mi away. We now feel that this is not far enough because some of the variables selected by the screening technique for 2-hr prediction were from this outer ring, which is beyond the 2-hr advection distance. This implies that advection alone should not be the only consideration in choice of stations.

A second criterion for restricting the total number of possible predictors was experience gained in some preliminary studies. We found, for example, that pressure and temperature were almost never selected by the screening techniques. Therefore, these variables were eliminated except possibly at the predictand station itself. On the other hand, variables such as weather and cloud information were selected by the screening techniques in the preliminary studies, and, therefore, these are included as possible predictors at almost all stations.

7.0 REFERENCES

The following are referred to in the foregoing sections and in the appendices:

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APPENDIX B
PREDICTOR VARIABLES

APPENDIX B. PREDICTOR VARIABLES

B.1 Introduction

The statistical forecast techniques being evaluated are grouped into two types:

(a) nonscreening techniques, which include persistence, expectancy of persistence, and grouping, and

(b) screening techniques, which include Lund contingency and multiple-discriminant analysis.

In the nonscreening techniques, the predictor variables are chosen beforehand by the investigator. In the screening techniques, a relatively large set of predictors is presented to the technique and a small set is selected. The predictors in the large set are called possible predictors; those in the small set are called selected predictors.

This appendix lists all the predictors used by the techniques for preparing 2- through 7-hr forecasts of ceiling and visibility for the seven evaluation stations.

B.2 Abbreviations Used in Tables

Tables B-1 through B-44 use the following abbreviations for meteorological elements.

CIG	Ceiling height
CLH	Height of lowest cloud layer
CTL	Cloud type of lowest cloud layer
DBT	Dry-bulb temperature
DIR	Wind direction to 16 points (0 = calm, 1 = NNE, ..., 9 = SSW, ..., 16 = N)
DOY	Day of year
DPT	Dew-point temperature
FNF	Fog occurrence

OCA	Opaque cloud amount
PNP	Precipitation occurrence
RLH	Relative humidity
SCL	Sky condition lower
SCU	Sky condition upper
SLP	Sea-level pressure
SNS	Stability classification (This term indicates the occurrence or nonoccurrence of weather events associated with instability, such as squalls, thunderstorms, etc.)
SPD	Wind speed
STP	Station pressure
TCA	Total cloud amount
TOD	Time of day
UWC	E-W wind (W is positive)
VIS	Visibility
VWC	N-S wind (S is positive)
WEA	Weather (See Table B-23)
WND	Wind velocity

B.3 Persistence

The only predictor needed for a persistence forecast is the present observation of the variable being predicted.

B.4 Grouping

Grouping is a nonscreening technique. The predictors are chosen subjectively. Any number of predictors can be chosen. Four predictors were chosen for each predictand, and each predictor was categorized into classes.

The predictors and the categorization limits are given in Tables B-1 through B-14. The number in any limit column is the asymptotic upper limit of that category and the exact lower limit of the next higher category. The lower limit of category 1 and the upper limit of the highest category are not given in the tables. However,

TABLE B-1
PREDICTORS SELECTED FOR GROUPING TECHNIQUE FOR ACY CIG

(a) 3-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	ACY	CIG	ft	200	500	1000	3000	Unl			
2	MIV	CIG	ft	200	500	1000	3000	Unl			
3	WRI	DIR	16 pt	1	5	9	12				
4	PHL	CIG	ft	200	500	1000	3000	Unl			

(b) 5-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	ACY	CIG	ft	200	500	1000	3000	Unl			
2	ACY	DIR	16 pt	1	5	9	12				
3	ACY	RLH	%	86	96						
4		TOD	hr	13							

(c) 7-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	ACY	CIG	ft	200	500	1000	3000	Unl			
2	ACY	DIR	16 pt	1	5	9	12				
3	SBY	CIG	ft	200	500	1000	3000	Unl			
4	MDT	DIR	16 pt	1	5	9	12				

TABLE B-2
PREDICTORS SELECTED FOR GROUPING TECHNIQUE FOR ACY VIS

(a) 3-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	ACY	VIS	mi	0.5	1	2	3	15			
2	PHL	TCA	10ths	7	10						
3	MIV	DIR	16 pt	1	5	9	12				
4	WRI	DIR	16 pt	1	5	9	12				

(b) 5-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	ACY	VIS	mi	0.5	1	2	3	15			
2	DCA	DIR	16 pt	1	5	9	12				
3	PHL	DIR	16 pt	1	5	9	12				
4	ACY	DIR	16 pt	1	5	9	12				

(c) 7-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	ACY	VIS	mi	0.5	1	2	3	15			
2	DCA	DIR	16 pt	1	5	9	12				
3	PHL	DIR	16 pt	1	5	9	12				
4	ACY	DIR	16 pt	1	5	9	12				

TABLE B-3
PREDICTORS SELECTED FOR GROUPING TECHNIQUE FOR IDL CIG

(a) 2-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	IDL	CIG	ft	200	500	1000	3000	Unl			
2	NEL	RLH	%	86	96						
3	FOK	CIG	ft	200	500	1000	3000	Unl			
4	TEB	CIG	ft	200	500	1000	3000	Unl			

(b) 3-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	IDL	CIG	ft	200	500	1000	3000	Unl			
2	NEL	RLH	%	86	96						
3	FOK	CIG	ft	200	500	1000	3000	Unl			
4	TEB	CIG	ft	200	500	1000	3000	Unl			

(c) 5-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	IDL	CIG	ft	200	500	1000	3000	Unl			
2	IDL	DIR	16 pt	1	5	9	12				
3	IDL	DPT	*F	31	41	51	61	66			
4		DOY	days	136	201						

(d) 7-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	IDL	CIG	ft	200	500	1000	2000	Unl			
2	IDL	DIR	16 pt	1	5	9	12				
3	BGY	DIR	16 pt	1	5	9	12				
4		TOD	hr	15							

TABLE B-4
PREDICTORS SELECTED FOR GROUPING TECHNIQUE FOR IDL VIS

(a) 2-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	IDL	VIS	mi	0.5	1	2	3	15			
2	IDL	DPT	*F	31	41	51	61	66			
3	IDL	DIR	16 pt	1	5	9	12				
4		DOY	days	136	201						

(b) 3-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	IDL	VIS	mi	0.5	1	2	3	15			
2	BDL	DIR	16 pt	1	5	9	12				
3	NEL	RLH	%	86	96						
4	TEB	CIG	ft	200	500	1000	3000	Unl			

(c) 5-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	IDL	VIS	mi	0.5	1	2	3	15			
2	IDL	RLH	%	86	96						
3	BDL	DIR	16 pt	1	5	9	12				
4		TOD	hr	4	16						

(d) 7-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	IDL	VIS	mi	0.5	1	2	3	15			
2	NEL	CIG	ft	200	500	1000	3000	Unl			
3	BGM	CIG	ft	200	500	1000	3000	Unl			
4		TOD	hr	15							

TABLE B-5
PREDICTORS SELECTED FOR GROUPING TECHNIQUE FOR WRI CIG

(a) 2-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	WRI	CIG	ft	200	500	1500	5000	Unl			
2	ACY	RLH	%	86	96						
3	NEL	CIG	ft	200	500	1500	5000	Unl			
4	PHL	CIG	ft	200	500	1500	5000	Unl			

(b) 4-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	WRI	CIG	ft	200	500	1500	5000	Unl			
2	PHL	TCA	10ths	7	10						
3	ACY	CIG	ft	200	500	1500	5000	Unl			
4		TOD	hr	7	21						

(c) 6-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	WRI	CIG	ft	200	600	1500	5000	Unl			
2	ABE	DIR	16 pt	1	5	9	12				
3	PHL	RLH	%	86	96						
4		TOD	hr	5	17						

TABLE B-6
PREDICTORS SELECTED FOR GROUPING TECHNIQUE FOR WRI VIS

(a) 2-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	WRI	VIS	mi	0.5	1	3	5	15			
2	WRI	DIR	16 pt	1	5	9	12				
3	NEL	VIS	mi	0.5	1	3	5	15			
4	ACY	VIS	mi	0.5	1	3	5	15			

(b) 4-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	WRI	VIS	mi	0.5	1	3	5	15			
2	NEL	CG	ft	200	500	1500	3000	Unl			
3	PHL	CG	ft	200	500	1500	3000	Unl			
4		TOD	hr	3	15						

(c) 6-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	WRI	VIS	mi	0.5	1	3	5	15			
2	WRI	DIR	16 pt	1	5	9	12				
3	ACY	RLH	%	86	96						
4	ABE	RLH	%	86	96						

TABLE B-7
PREDICTORS SELECTED FOR GROUPING TECHNIQUE FOR OFF CIG

(a) 2-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	OFF	CIG	ft	300	1000	1500	5000	Unl			
2	OFF	DBT	"F	21	31	41	51	61	71	81	
3		TOD	hr	7	19						
4		DOY	days	136	274						

(b) 4-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	OFF	CIG	ft	300	1000	1500	5000	Unl			
2	DSM	CIG	ft	300	1000	1500	5000	Unl			
3	MKC	RLH	%	86	96						
4	GRI	CIG	ft	300	1000	1500	5000	Unl			

(c) 6-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	OFF	CIG	ft	300	1000	1500	5000	Unl			
2	DSM	CIG	ft	300	1000	1500	5000	Unl			
3	MKC	RLH	%	86	96						
4	GRI	CIG	ft	300	1000	1500	5000	Unl			

TABLE B-8
PREDICTORS SELECTED FOR GROUPING TECHNIQUE FOR OFF VIS

(a) 2-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	OFF	VIS	mi	0.5	1	3	5	15			
2	OFF	DPT	*F	11	21	31	41	51	61		
3	OFF	DIR	16 pt	1	5	9	12				
4		DOY	days	136	201						

(b) 4-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	OFF	VIS	mi	0.5	1	3	5	15			
2	OFF	DPT	*F	11	21	31	41	51	61		
3	OFF	DIR	16 pt	1	5	9	12				
4		DOY	days	136	201						

(c) 6-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	OFF	VIS	mi	0.5	1	3	5	15			
2	DSM	CIG	ft	300	1000	1500	5000	Unl			
3	GRI	CIG	ft	300	1000	1500	5000	Unl			
4		TOD	hr	3	15						

TABLE B-9
PREDICTORS SELECTED FOR GROUPING TECHNIQUE FOR RND CIG

(a) 2-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	RND	CIG	ft	200	400	1500	5000	Unl			
2	CRP	RLH	%	86	96						
3	AUS	CIG	ft	200	400	1500	5000	Unl			
4	CRP	CIG	ft	200	400	1500	5000	Unl			

(b) 4-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	RND	CIG	ft	200	400	1500	5000	Unl			
2	CRP	RLH	%	86	96						
3	AUS	CIG	ft	200	400	1500	5000	Unl			
4	CRP	CIG	ft	200	400	1500	5000	Unl			

(c) 6-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	RND	CIG	ft	200	400	1500	5000	Unl			
2	CRP	RLH	%	86	96						
3	AUS	CIG	ft	200	400	1500	5000	Unl			
4	CRP	CIG	ft	200	400	1500	5000	Unl			

TABLE B-10
PREDICTORS SELECTED FOR GROUPING TECHNIQUE FOR RND VIS

(a) 2-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	RND	VIS	mi	0.5	1	3	5	15			
2	RND	DBT	*F	36	46	56	66	76			
3		DOY	days	136	201						
4		TOD	hr	3	7						

(b) 4-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	RND	VIS	mi	0.5	1	3	5	15			
2	RND	DBT	*F	36	46	56	66	76			
3		DOY	days	136	201						
4		TOD	hr	3	7						

(c) 6-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	RND	VIS	mi	0.5	1	3	5	15			
2	RND	DIR	16 pt	1	5	9	12				
3	EFD	CIG	ft	200	400	1500	5000	Unl			
4	AUS	CIG	ft	200	400	1500	5000	Unl			

TABLE B-11
PREDICTORS SELECTED FOR GROUPING TECHNIQUE FOR DCA CIG

(a) 2-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	DCA	CIG	ft	200	500	1000	3000	Unl			
2	DCA	DIR	16 pt	1	5	9	12				
3	DCA	DPT	°F	31	41	51	61	66			
4		DOY	days	136	201						

(b) 3-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	DCA	CIG	ft	200	500	1000	3000	Unl			
2	DCA	DIR	16 pt	1	5	9	12				
3	DCA	DPT	°F	31	41	51	61	66			
4		DOY	days	136	201						

(c) 5-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	DCA	CIG	ft	200	500	1000	3000	Unl			
2	DCA	DIR	16 pt	1	5	9	12				
3	DCA	RLH	°	86	96						
4		TOD	hr	3	15						

(d) 7-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	DCA	CIG	ft	200	500	1000	3000	Unl			
2	DCA	DIR	16 pt	1	5	9	12				
3	DCA	RLH	°	86	96						
4		TOD	hr	3	15						

TABLE B-12
PREDICTORS SELECTED FOR GROUPING TECHNIQUE FOR DCA VIS

(a) 2-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	DCA	VIS	mi	0.5	1	2	3	15			
2	DCA	RLH	ft	36	96						
3	DCA	DIR	16 pt	1	5	9	12				
4		TOD	hr	5	18						

(b) 3-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	DCA	VIS	mi	0.5	1	2	3	15			
2	DCA	RLH	ft	36	96						
3	DCA	DIR	16 pt	1	5	9	12				
4		TOD	hr	5	18						

(c) 5-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	DCA	VIS	mi	0.5	1	2	3	15			
2	MRB	CIG	ft	200	500	1000	3000	Unl			
3	GVE	CIG	ft	200	500	1000	3000	Unl			
4		TOD	hr	3	15						

(d) 7-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	DCA	VIS	mi	0.5	1	2	3	15			
2	DCA	RLH	ft	36	96						
3	DCA	DIR	16 pt	1	5	9	12				
4		TOD	hr	3	15						

TABLE B-13
PREDICTORS SELECTED FOR GROUPING TECHNIQUE FOR CEF CIG

(a) 2-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	CEF	CIG	ft	200	600	1500	5000	Unl			
2	BDL	CIG	ft	200	600	1500	5000	Unl			
3	IDL	RLH	%	86	96						
4	IDL	DIR	16 pt	1	5	9	12				

(b) 3-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	CEF	CIG	ft	200	600	1500	5000	Unl			
2	BDL	CIG	ft	200	600	1500	5000	Unl			
3	IDL	RLH	%	86	96						
4	IDL	DIR	16 pt	1	5	9	12				

(c) 4-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	CEF	CIG	ft	200	600	1500	5000	Unl			
2	BDL	CIG	ft	200	600	1500	5000	Unl			
3	IDL	RLH	%	86	96						
4	IDL	DIR	16 pt	1	5	9	12				

(d) 6-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	CEF	CIG	ft	200	600	1500	5000	Unl			
2	IDL	RLH	%	86	96						
3	CEF	DIR	16 pt	1	5	9	12				
4	ALB	CIG	ft	200	600	1500	5000	Unl			

TABLE B-14
PREDICTORS SELECTED FOR GROUPING TECHNIQUE FOR CEF VIS

(a) 2-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	CEF	VIS	mi	0.5	1	3	5	15			
2	BDL	VIS	mi	0.5	1	3	5	15			
3	IDL	RLH	%	86	96						
4	IDL	DIR	16 pt	1	5	9	12				

(b) 3-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	CEF	VIS	mi	0.5	1	3	5	15			
2	BDL	VIS	mi	0.5	1	3	5	15			
3	IDL	RLH	%	86	96						
4	IDL	DIR	16 pt	1	5	9	12				

(c) 4-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	CEF	VIS	mi	0.5	1	3	5	15			
2	BDL	VIS	mi	0.5	1	3	5	15			
3	IDL	RLH	%	86	96						
4	IDL	DIR	16 pt	1	5	9	12				

(d) 6-hr forecast

Order	Sta	Elem	Unit	Limits of category							
				1	2	3	4	5	6	7	8
1	CEF	VIS	mi	0.5	1	3	5	15			
2	BDL	VIS	mi	0.5	1	3	5	15			
3	IDL	RLH	%	86	96						
4	IDL	DIR	16 pt	1	5	9	12				

from meteorological considerations, it is always clear what their limits are.

B.5 Climatological Expectancy of Persistence

Climatological expectancy of persistence is a nonscreening technique. The primary predictor is the present observation of the variable to be forecast. Generally, time of day and season are used as additional predictors. The form used in this study included day or night as a second predictor and warm-surface season or cold-surface season as a third predictor.

Since the predictors are always the same, tables are not given.

B.6 Lund Contingency Prognosis

Tables B-15 through B-21 give the possible and selected predictors for Lund contingency prognosis. The number of possible predictors varies from 20 to 50, but there are always five selected predictors. This number was set by Mr. Iver Lund, the originator of the technique.

Each table lists the predictors available, predictors used, and order of predictors selected for each station for various forecast lengths.

EXAMPLE. In Table B-15, Predictors for Lund Technique at ACY, the first column ("Sta") lists the stations that comprise the Atlantic City Airport network; the second column ("Elem") lists the variables that were reported and available for each of the network stations; the third column ("3-hr ceiling") lists all the predictors presented to the Lund technique for selection. The X's indicate a predictor presented but not selected, and the numbers 1 through 5 identify the predictors selected and their order. Thus, for 3-hr ceiling forecasts at Atlantic City Airport, there were 59 predictors available from the network (the total of the entries under "Elem"). Of these, 25 were presented to the Lund technique (the total of the entries under "3-hr ceiling"). The predictors selected were

1. ACY-CIG (Atlantic City, ceiling),
2. ACY-SNS (Atlantic City, stability classification),
3. PHL-SNS (Philadelphia, stability classification),
4. MIV-SNS (Millville, stability classification),
5. WRI-SNS (McGuire AFB, stability classification).

TABLE B-15
PREDICTORS FOR LUND TECHNIQUE AT ACY

Sta	Elem	Ceiling						Visibility					
		2-hr	3-hr	4-hr	5-hr	6-hr	7-hr	2-hr	3-hr	4-hr	5-hr	6-hr	7-hr
ACY	CIG		1		1		1		3		4		5
	VIS						X		1		1		1
	UWC						X		X				
	RLH						X		X				
	TCA		X		X		X		X				
	CLH						X						
	PNP		X		X		X		X				
	FNF						X		X				
	SNS		2		3		4		4		5		X
DCA	CIG		X		X		2		X				
	VIS								X		X		X
	UWC						X						
	RLH								X				
	TCA						X		X				
	PNP								X				
ORF	CIG		X		X				X		X		X
	VIS								X		X		X
	RLH								X				
	TCA		X		X				X				
NEL	CIG		X		X		X		X				
	VIS								X		X		X
	RLH								X				
	TCA		X		X				X				
WRI	CIG		X		X		5		X				
	VIS								X		X		X
	RLH						X		X				
	TCA		X		X				X		X		X
	PNP		X		X				X				
	FNF								X				
	SNS		5		5				X		X		3
	CIG								X				
	VIS								X		X		X

MIV	VWC					X						
	RLH							X				
	TCA	X		X		X		X				
	PNP							X				
	FNF							X				
	SNS	3		4				2		2		2
	CIG	X		X				X				
	VIS							X		X		X
	TCA							X				
	PNP	X		X				X		X		X
SBY	FNF							X				
	SNS	4		X				X		X		X
	CIG	X		X				5		X		X
	VIS							X				
	TCA							X		X		X
MDT	SNS	X		X								
	CIG							X				
	VIS							X				
	TCA							X				
AVP	SNS	X		X						X		X
	VIS							X				
	VWC					X		X				
	TCA	X		X		X				X		X
	SNS	X		2		3		X		3		4
TOD	TOD	X		X						X		X
DOY	DOY	X		X						X		X

TABLE B-16
PREDICTORS FOR LUND TECHNIQUE AT IDL

Sta	Elem	Ceiling						Visibility					
		2-hr	3-hr	4-hr	5-hr	6-hr	7-hr	2-hr	3-hr	4-hr	5-hr	6-hr	7-hr
IDL	CIG	1	1		1		1	4	X		1		X
	VIS	X						1	1		5		5
	UWC	X			X		X	X					X
	VWC	X			X		X						
	RLH	X			X		X	X					X
	SCL	X			X		X						
	TCA							X					X
	OCA	X			X		X	X					X
	PNP							X					X
	FNF							X					X
	SNS		5										
FOK	CIG	X			X		X	X					X
	VIS							X	X		X		X
	RLH	X						X					X
	TCA	3	X		X		X	X	X		X		X
	SNS		X										
BGM	CIG	X			X		X						
	VIS							X					X
	VWC				X		X	X					X
	TCA	2	X		X		3	X					X
	SNS		X					X					X
TEB	CIG	X	X		X		X	X					X
	VIS		X					X	X		X		X
	SNS								5		X		
NEL	CIG	X			X		X	X	4		X		4
	VIS							X					X
	TCA	X	X		X		X	X					X
	OCA	X			X		X						
	CLA	X			X		X						
	CTL	X			X		X						
	CLH	X			X		X						
	PNP							X					X

ALB	FNF							X				X
	SNS		X						X		X	
	CIG	X	X		X		X	X				X
	VIS							X				
	TCA	X			X		X	X	X		X	X
PVD	SNS		4					3	X		4	3
	CIG				X		X	X				X
	VIS							X	X		X	X
	TCA	X	X		5		X	X				X
	CLA	X			X		X					
BDL	CLH	X			X		X					
	SNS								2		3	
	CIG	X			X		X	X				X
	VIS							X				X
	VWC		X		X		X					
CON	TCA	4	X		X		5	X				X
	OCA	5			4		X					
	CLA	X			X		X					
	CLH	X			X		X					
	FNF								X		X	
SBY	SNS		3					2	3		2	2
	CIG	X			X		X					
	VIS							5	X		X	X
	UWC								X			
	TCA	X			X		X					
MDT	SNS		2									
	CIG	X	X		3		4	X				X
	VIS							X	X		X	X
	TCA	X	X		X		X	X	X		X	X
	CIG	X	X		2		2	X				X
TOD	VIS							X	X		X	1
	TCA	X	X		X		X	X	X		X	X
	SNS		X									
	TOD	X	X					X	X		X	X
	DOY	X	X					X	X		X	X

TABLE B-17
PREDICTORS FOR LUND TECHNIQUE AT WRI

Sta	Elem	Ceiling						Visibility					
		2-hr	3-hr	4-hr	5-hr	6-hr	7-hr	2-hr	3-hr	4-hr	5-hr	6-hr	7-hr
NEL	CIG	5		X		X		2				4	
	VIS							X		X			
	UWC	X		X		X		X		X		X	
	VWC	X											
	RLH	X		X				X		X			
	TCA	X		X				X		X			
	PNP					X							
	FNF											X	
WRI	CIG	1		1		X				X			
	VIS							1		1		1	
	UWC	X		X		X		X		X		X	
	VWC	X		X				X					
	RLH	X		X		X		X		X		X	
	TCA			X						X			
	PNP	X				X							
	FNF							X		X		X	
PHL	CIG	3		2		1		4		2			
	VIS							X				X	
	UWC	X											
	VWC	X		X				X		X			
	RLH	X		X		X		X		X		X	
	TCA	X		X				X		X			
	PNP	X				X							
	FNF							X				X	
ACY	CIG	2		5		3		3		3			
	VIS	X		X				X		X		X	
	UWC	X				X		X				X	
	VWC	X						X					
	RLH	X		X				X		X			
	TCA	X						X					
	PNP	X		X		X							
	FNF							X		X		X	

ABF	CIG	X		X		X		5			X
	VIS			.		.		X	X		
	UWC	X		X		X		X	X		X
	VWC	X									
	RLH	X		X		X		X	X		X
	TCA	X		X				X	X		
	EWR	CIG	X	X		X		X	X		
		VIS	X					X			X
		UWC	X					X			
		VWC	X					X			
		RLH	X					X			
		TCA	4	X		X		X	X		X
DCA	PNP					X					
	FNF										X
	CIG			4		2			X		
	VIS										2
	UWC			X					X		
	RLH			X		X			X		X
	PNP			X		X					
	FNF								X		X
	ORF	CIG		3		4			4		3
		UWC		X		X			X		X
		RLH		X					X		
		TCA		X		X			X		X
IPT	CIG			X		X					
	VIS								5		5
	UWC			X					X		
	RLH			X		X			X		X
	TCA			X		X			X		X
	ALB	CIG				X					X
		RLH				X					X
		TCA				X					X
		CIG				5					X
PVD	VWC					X					X
	TCA					X					X
TOD	TOD	X		X		X		X	X		X
DOY	DOY	X		X		X		X	X		X

TABLE B-18
PREDICTORS FOR LUND TECHNIQUE AT OFF

[illegible]

MSP	SNS	X		5								
	CIG	X		X		X						
	VIS							X				
	UWC										X	
DSM	TCA	X						X		X		
	CIG	X		X		X		X		X		
	VIS			X				X		X		
	UWC							X				
	RLH	X				X		X		X		
	TCA	X		X		X					X	
	PNP									X		
	FNF									X		
MKC	SNS										X	2
	CIG	X		X		X						
	VIS									X		
	UWC									X		
	VWC	X										
	RLH	X									X	
	TCA	X				X		X		X	X	
	PNP			X		X		X				
SGF	FNF										X	
	SNS										3	
	CIG	X		X		X						
	VIS	X										
	UWC							X			X	
	TCA	X		X				X		X		
	PNP	X		X		X						
	CIG			X		X						
LBF	UWC									X	X	
	TCA					X		X		X	X	
	CIG					X						
	UWC					X				X	X	
MLI	TCA			X		X		X		X	X	
	TOD			X		X		X		X	X	
	DOY					X		X		X	X	
	DOY					X		X		X	X	

TABLE B-19
PREDICTORS FOR LUND TECHNIQUE AT RND

Sta	Elem	Ceiling						Visibility					
		2-hr	3-hr	4-hr	5-hr	6-hr	7-hr	2-hr	3-hr	4-hr	5-hr	6-hr	7-hr
RND	CIG	1		1		1		X		X		X	
	VIS	4		X		X		1		1		1	
	UWC	X		X		X		X		X		X	
	RLH	X		X		X		X		X		X	
	TCA	X		X		X		X		X		X	
	PNP	X		X		X				X		X	
	FNF	X		X		X				X		X	
	SNS	X		4		3		2		2		3	
DLF	CIG	X		X		X		X		X		X	
	VIS							4		X		X	
	UWC			X		X		X		X		X	
	VWC	X											
	RLH	X		X		X				X		X	
	TCA	X		X		X		X		X		X	
	CIG	X		X		X		X		X		X	
	VIS			2		2		5		5		5	
AUS	VWC	X		X		X		X		X		X	
	RLH	X				X		X		X			
	TCA	X		X				X		X		X	
	PNP			X		X				X		X	
	SNS	5		X		X				4		4	
	CIG			X		X							
	VIS							X		X		X	
	VWC			X		X				X		X	
WAO	RLH	X		X						X			
	TCA	X		X		X		X		X		X	
	PNP					X							
	SNS			5		5						X	
	CIG	X		X		X		X		X		X	
	VIS	X		X		X		X		X		X	
	VWC	X		X		X		X		X		X	
	RLH											X	
CRP	TCA			X		X		X		X		X	

FFD	PNP	X		X		X			X		X
	FNF					X			X		X
	SNS	3		3		4			3		2
	CIG	X		X		X	X		X		X
	VIS	X		X			X		X		X
	UWC	X		X		X	X		X		X
ACF	TCA	X		X		X	X		X		X
	VIS						X				
	TCA	X		X		X	X		X		X
LRD	CIG	X		X		X					X
	VIS	2					3		X		X
	UWC					X			X		
BRO	RLH					X					X
	TCA			X		X	X		X		X
	PNP	X									
	FNF	X									
	CIG			X		X					
	VIS								X		X
	UWC			X		X	X		X		X
	RLH										X
	TCA			X		X	X		X		X
	PNP										X
TOD	SNS								X		
	TOD	X		X		X	X		X		X
DOY	DOY	X		X		X	X		X		X

PREDICTORS FOR LUND TECHNIQUE AT DCA

Sta	Elem	Ceiling						Visibility					
		2-hr	3-hr	4-hr	5-hr	6-hr	7-hr	2-hr	3-hr	4-hr	5-hr	6-hr	7-hr
ACY	CIG	X	X		X		X						
	VIS				X		X				X		X
	TCA	X	X					X	4		X		X
	SNS				X		X						
DCA	CIG	1	1		1		X	4	2		1		X
	VIS	X	X		X		X	1	1		5		X
	UWC	X	X		X		X	X	X		X		X
	RLH	X	X										
	TCA	X	X		X		X	X	X		X		2
	PNP	X	X		X		X	X	X		X		X
	FNF	X	X					X	X		X		1
	SNS	5	X		5		3	3	X		3		X
ORF	CIG	X	X		X		X						
	VIS	X	X										
	UWC				X		X				X		X
	TCA				X		X	X	X		X		5
	SNS	3	3					X	X				
IPT	CIG	X	X										
	TCA	X	X		X		X	X	3		X		X
	SNS	2	2		2		X	X	X		X		X
MRB	CIG				X		X				2		X
	VIS										X		X
	VWC	X	X										
	TCA	X	X		X		X	X	5		X		4
	PNP	X	X										
GVE	SNS	X	4		3		X	X	X		X		X
	CIG	X	X		X		2	X	X		X		X
	VIS				X		X	X	X		X		X
	UWC										X		X
	TCA	X	X		X		X	X	X				
NHK	SNS	4	5		4		5	2	X		X		X
	CIG	X	X		X		1	X	X		X		X

	TCA	X	X		X		X	X	X				
	PNP	X	X										
	SNS	X	X					X	X				
ANP	CIG	X	X		X		X	X	X		X		X
	VIS	X	X		X		X	X	X		X		X
	VWC	X	X		X		X	X	X		X		X
	TCA	X	X					X	X		X		3
	PNP				X		X				X		X
	FNF				X		X						
	SNS				X		4	5	X		4		X
ROA	TCA	X	X		X		X	X	X		X		X
	SNS				X		X						
PIT	TCA	X	X		X		X	X	X		X		X
	PNP	X	X										
	SNS	X	X		X		X	X	X		X		X
TOD	TOD	X	X		X		X	X	X		X		X
DOY	DOY	X	X		X		X	X	X		X		X

TABLE B-21
PREDICTORS FOR LUND TECHNIQUE AT CEF

Sta	Elem	Ceiling						Visibility					
		2-hr	3-hr	4-hr	5-hr	6-hr	7-hr	2-hr	3-hr	4-hr	5-hr	6-hr	7-hr
IDL	CIG	X	X	X		5							
	VIS	X	X					X	X	X		X	
	UWC	X				X						X	
	RLH	X											
	TCA					X		X	X	X			
	PNP			X									
CEF	SNS	3	X	5									
	CIG	1	1	1		X		X	X	X		X	
	VIS	X	X	X		X		1	1	1		X	
	UWC	X	X	X		X		X	X	X		X	
	VWC							X	X	X		X	
	RLH	X	X	X				X	X	X		X	
	TCA	X	X	X		X		5	X	X		X	
	PNP	X	X	X		X		X	X	X		X	
	INF	X	X	X		X		X	X	X		X	
	SNS	5	X	4		4		3	2	4			
BED	CIG	X	X	X		X							
	VIS	X	X					X	X	X		X	
	UWC	X											
	VWC			X				X	X	X		X	
	TCA	X	X			X		X	X	X		X	
	PNP	X											
	SNS	X	5	X				X	X	5			
	CIG	X	X										
SYR	TCA	X	X	X		X		X	X	X		X	
	SNS											X	
	CIG	X	X										
BTB	TCA	X	X	X		X		X	X	X		X	
	SNS											X	
	CIG	X	X	X		X						X	
ALB	VIS							X	X	X		X	
	VWC	X		X		X							

PVD	TCA	X	X	X			X	X	X		X	
	PNP	X										
	SNS	X	X	X	X		X	X	X		3	
	CIG	X	X	X			X	X	X			
	VIS	X	X				X	X	X		X	
	UWC	X										
BDL	VWC			A		X					X	
	TCA	X	X	X		X	X	X	X		X	
	PNP	X		X		X	X	X	X		X	
	SNS	4	4	X	2		4	4	2		2	
	CIG	X	X	X	1		X	X	X		5	
	VIS	X		X			X	5	X		1	
ACY	TCA	X	X			X						
	PNP	X		X			X	X	X			
	FNF	X										
	SNS		3	3			2	3	3			
	CIG	X	X									
	TCA	X	X	X		X	X	X	X		X	
AVP	CIG	X	X									
PWM	VIS										X	
	TCA	X	X	X		X	X	X	X		X	
	SNS			X							4	
	CIG	X	X									
	TCA	X	X	X		X	X	X	X		X	
	SNS	2	2	2		3						
TOD	TOD	X	X	X		X	X	X	X		X	
DOY	DOY	X	X	X		X	X	X	X		X	

B.7 Multiple-discriminant Analysis

B.7.1 Zero-one Variables*

Before each predictor is presented to the multiple-discriminant analysis computer program for screening, it is transformed into a set of zero-one variables. The method for converting values of observed meteorological parameters to corresponding values of zero-one variables is explained by the following example.

EXAMPLE. Total cloud cover is a normally observed meteorological parameter. Its value is reported in tenths of sky covered. A reasonable set of mutually exclusive and exhaustive categories into which total cloud cover can be broken consists of sky conditions of clear, scattered, broken, and overcast. Let X_{14} be total sky cover and $Z_{14,1}$, $Z_{14,2}$, $Z_{14,3}$, and $Z_{14,4}$ be clear, scattered, broken, and overcast, respectively. Thus, the meteorological parameter X_{14} generates four predictor variables determined by zero-one values assigned to $Z_{14,1}$, $Z_{14,2}$, $Z_{14,3}$, $Z_{14,4}$. Table B-22 shows the method of conversion. To transform a value of X_{14} to the proper zero-one variables, four questions are asked:

- (a) Is the sky condition clear?
- (b) Is the sky condition scattered?
- (c) Is the sky condition broken?
- (d) Is the sky condition overcast?

When a question is answered affirmatively, a 1 is entered in the appropriate column; when answered negatively, a 0 is entered in the appropriate column. The Z-variables are the ones presented to the MDA technique for screening.

All meteorological parameters do not generate the same number of zero-one variables; the number of variables depends upon the number of mutually exclusive and exhaustive categories into which the meteorological parameter can be reasonably divided. Table B-23 lists the meteorological parameters used to obtain the Z-predictors (first column), the number of zero-one variables generated (second column), and the limits of the mutually exclusive and exhaustive categories into which each

Elsewhere in the literature surrounding the application of the multiple-discriminate analysis to meteorological problems, these have been referred to as dummy, binary, dichotomous, and item variables.

TABLE B-22
CONVERTING REPORTED VALUES OF TOTAL SKY COVER
TO VALUES OF ZERO-ONE VARIABLE

Total sky cover, tenths of sky	Corresponding value of X_{14}			
	$Z_{14, 1}$ (clear)	$Z_{14, 2}$ (scattered)	$Z_{14, 3}$ (broken)	$Z_{14, 4}$ (overcast)
0	1	0	0	0
1	0	1	0	0
2	0	1	0	0
3	0	1	0	0
4	0	1	0	0
5	0	1	0	0
6	0	0	1	0
7	0	0	1	0
8	0	0	1	0
9	0	0	1	0
10	0	0	0	1

TABLE B-23
ZERO-ONE VARIABLES GENERATED BY EACH METEOROLOGICAL PARAMETER

Meteorological parameter	Number of zero-one variables	Limits of categories
CIG VIS	5 5	The class limits for all predictor stations in a network are identical to the operational limits of the predicted variable. See Table 2-1 of the main body [7].
UWC VWC DBT DPT RLH STP	5 5 5 5 4 4	Limits were determined from the frequency distribution of the variable. The limits are the values of the variable which divide the distribution according to desired percentage. The percentages are such that the error in grouping is minimized. See Bryan* for a detailed exposition.
TCA	4	Cloud amount, 10ths of sky covered
		1. $TCA < 1$ 2. $1 \leq TCA < 6$ 3. $6 \leq TCA \leq 9$ 4. $9 < TCA$
CLH	15	Height of cloud layer, ft
		1. $CLH < 100$ 2. $100 \leq CLH < 200$ 3. $200 \leq CLH < 300$ 4. $300 \leq CLH < 400$ 5. $400 \leq CLH < 500$ 6. $500 \leq CLH < 600$ 7. $600 \leq CLH < 700$ 8. $700 \leq CLH < 800$ 9. $800 \leq CLH < 1,000$ 10. $1,000 \leq CLH < 1,500$

*Bryan, J. G., and J. R. Southan, Optimum Subdivision of a Variable by the Method of D. R. Cox. TRC-21, The Travelers Research Center, Inc., Apr. 1962.

Meteorological parameter	Number of zero-one variables	Limits of categories	
		Height of cloud layer, ft	
		11.	$1,500 \leq CLH < 3,000$
		12.	$3,000 \leq CLH < 5,000$
		13.	$5,000 \leq CLH < 10,000$
		14.	$10,000 \leq CLH < 20,000$
		15.	$20,000 \leq CLH$
CTL	14	Cloud type	
		1.	None
		2.	Cirrus and cirrocumulus
		3.	Thin obscuration other than fog and obscuration other than fog
		4.	Cirrostratus
		5.	Alto cumulus and alto cumulus castellatus
		6.	Altostratus
		7.	Cumulus
		8.	Fractocumulus
		9.	Fractostratus
		10.	Stratocumulus
		11.	Cumulomammatus and cumulonimbus
		12.	Nimbostratus
		13.	Stratus
		14.	Thin fog and fog
WND	9	Direction	Speed, knots
		1. Any	$0 \leq SPD \leq 5$
		2. NNE through E	$5 < SPD \leq 12$
		3. NNE through E	$12 < SPD$
		4. ESE through S	$5 < SPD \leq 12$

Meteorological parameter	Number of zero-one variables	Limits of categories	
		Direction	Speed, knots
		5. ESE through S	12 < SPD
		6. SSW through WSW	5 < SPD ≤ 12
		7. SSW through WSW	12 < SPD
		8. W through N	5 < SPD ≤ 12
		9. W through N	12 < SPD
WEA	12	Weather element	Teletype code
		1. None	(No symbol)
		2. Rain	R-,R,R+
		3. Rain showers	RW-,RW,RW+
		4. Drizzle	L-,ZL-,L,ZL,L+,ZL+
		5. Snow	S-,SP-,IC-,SG-,S,SP,IC,SG,S+,SP+,IC+,SG+
		6. Snow showers	SW-,SQ-,SW,SQ,SW+,SQ+
		7. Thunder, hail	T,Q T+,Q+,TOR,Q-,A-,A,A+,AP-,AP,AP+
		8. Freezing rain	ZR-,E-,EW-,ZR,E,EW,FR+,E+,EW+
		9. Fog	F,IF
		10. Ground fog	GF
		11. Blowing dust	BD,BN,BS,BY
		12. Smoke	K,H,KH,D
TOD	1	A value 1 indicates that the time of the forecast is between the hours of 0200 and 1300 inclusive.	
DOY	1	A value 1 indicates that the day the forecast is made is between the 151st and 304th days of the year, inclusive.	

meteorological parameter has been divided (third column). Definition of the abbreviations used for the meteorological parameters can be found in Section B.2.

B.7.2 Possible Predictors

The number of possible predictors presented to the multiple-discriminant analysis technique is large. The Lund technique screened as many as 50 predictors, whereas the multiple-discriminant analysis technique screened more than 400 in all cases. Tables B-24 through B-30 list the possible predictors presented to the multiple-discriminant analysis technique. The total number of possible predictors is given at the bottom of each table.

One set of possible predictors was used for each evaluation station. Predictors for each predictand variable and each forecast period were selected from this same set. CIG, VIS, RLH, TCA, WEA, and WND were used at all the predictor stations whenever possible. DBT, DPT, STP, CLH, and CTL, whenever available, were used at the predictand station only. TOD and DOY were always used. UWC and VWC were used only at PWM as predictors for Westover.

B.7.3 Selected Predictors

Tables B-31 through B-44 list the predictors selected by the multiple-discriminant analysis technique for all predictands in the evaluation. Each table lists the order of selection (statistical screening criteria), the predictor station, the predictor variable, and the limits of the predictor variable.

EXAMPLE. In Table B-31(a), the predictand is the 3-hr forecast of Atlantic City ceiling; the most important predictor is Atlantic City ceiling equal to or greater than 1000 ft but less than 3000 ft; 20 statistically significant predictors were selected.

TABLE B-24
MDA POSSIBLE PREDICTORS FOR ACY

Elem	No. of 0-1 variables	Station										
		ACY	DCA	ORF	NEL	WRI	PHL	MIV	SBY	MDT	AVP	
CIG	5	X	X	X	X	X	X	X	X	X	X	
VIS	5	X	X	X	X	X	X	X	X	X	X	
UWC	5											
VWC	5											
DBT	5	X										
DPT	5	X										
RLH	4	X	X	X	X	X	X	X	X	X	X	
STP	4	X										
TCA	4	X	X	X	X	X	X	X	X	X	X	
CLH	15	X										
WEA	12	X	X	X	X	X	X	X	X	X	X	
WND	9	X	X	X	X	X	X	X	X	X	X	
TOD	1	X										
DOY	1	X										

Total number of possible predictors = 421

TABLE B-25
MDA POSSIBLE PREDICTORS FOR IDL

Elem	No. of 0-1 variables	Station										
		IDL	FOK	BGM	TEB	NEL	ALB	PVD	BDL	CON	SBY	MDT
CIG	5	X	X	X	X	X	X	X	X	X	X	X
VIS	5	X	X	X	X	X	X	X	X	X	X	X
UWC	5											
VWC	5											
DBT	5	X										
DPT	5	X										
RLH	4	X	X	X		X	X	X	X	X		X
STP	4	X										
TCA	4	X	X	X		X	X	X	X	X	X	X
CLH	15											
WEA	12	X	X	X	X	X	X	X	X	X	X	X
WND	9	X	X	X	X	X	X	X	X	X	X	X
TOD	1	X										
DOY	1	X										
Total number of possible predictors = 433												

TABLE B-26
MDA POSSIBLE PREDICTORS FOR WRI

Elem	No. of 0-1 variables	Station										
		WRI	NEL	PHL	ALB	PVD	ACY	DCA	ORF	IPT	ABE	EWR
CIG	5	X	X	X	X	X	X	X	X	X	X	X
VIS	5	X	X	X	X	X	X	X	X	X	X	X
UWC	5											
VWC	5											
DBT	5	X										
DPT	5	X										
RLH	4	X	X	X	X	X	X	X	X	X	X	X
STP	4											
TGA	4	X	X	X	X	X	X	X	X	X	X	X
CLH	15											
WEA	12	X	X	X	X	X	X	X	X	X	X	X
WND	9	X	X	X	X	X	X	X	X	X	X	X
TOD	1	X										
DOY	1	X										
Total number of possible predictors = 451												

TABLE B-27
MDA POSSIBLE PREDICTORS FOR OFF

Elem	No. of 0-1 variables	Station										
		OFF	HON	FSD	LBF	GRI	SSH	MSP	MLI	DSM	MKC	SGF
CIG	5	X	X	X	X	X	X	X	X	X	X	X
VIS	5	X	X	X	X	X	X	X	X	X	X	X
UWC	5											
VWC	5											
DBT	5	X										
DPT	5	X										
RLH	4	X	X	X	X	X		X	X	X	X	X
STP	4											
TCA	4	X	X	X	X	X	X	X	X	X	X	X
CLH	15											
WEA	12	X	X	X	X	X	X	X	X	X	X	X
WND	9	X	X	X	X	X	X	X	X	X	X	X
TOD	1	X										
DOY	1	X										
Total number of possible predictors = 437												

TABLE B-28
MDA POSSIBLE PREDICTORS FOR RND

Elem	No. of 0-1 variables	Station										
		RND	DLF	AUS	WAO	ORP	EFD	ACF	LRD	BRO	LOH	
CIG	5	X	X	X	X	X	X	X	X	X	X	
VIS	5	X	X	X	X	X	X	X	X	X	X	
VWC	5											
DBT	5	X										
DPT	5	X										
RLH	5	X	X	X	X	X	X	X	X	X	X	
STP	4	X										
TCA	4	X	X	X	X	X	X	X	X	X	X	
CTL	14	X										
CLH	15	X										
WEA	12	X	X	X	X	X	X	X	X	X	X	
WND	9	X	X	X	X	X	X	X	X	X	X	
TOD	1	X										
DOY	1	X										
Total number of possible predictors = 435												

TABLE B-29
MDA POSSIBLE PREDICTORS FOR DCA

Elem	No. of 0-1 variables	Station										
		ACY	DCA	ORF	IPT	MRB	GVE	NHK	ANP	ROA	PIT	
CIG	5	X	X	X	X	X	X	X	X	X	X	
VIS	5	X	X	X	X	X	X	X	X	X	X	
VWC	5											
DBT	5		X									
DPT	5		X									
RLH	5	X	X	X	X			X	X	X	X	
STP	4		X									
TCA	4	X	X	X	X	X	X	X	X	X	X	
CTL	14		X									
CLH	15		X									
WEA	12	X	X	X	X	X	X	X	X	X	X	
WND	9	X	X	X	X	X	X	X	X	X	X	
TOD	1		X									
DOY	1		X									
Total number of possible predictors = 427												

TABLE B-30
MDA POSSIBLE PREDICTORS FOR CEF

Elem	No. of 0-1 variables	Station										
		IDL	CEF	BED	SYR	BTB	ALB	PVD	BDL	ACY	AVP	PWM
CIG	5	X	X	X	X	X	X	X	X	X	X	X
VIS	5	X	X	X	X	X	X	X	X	X	X	X
UWC	5											X
VWC	5											X
DBT	5		X									
DPT	5		X									
RLH	4	X	X	X	X	X	X	X	X	X	X	X
STP	4											
TCA	4	X	X	X	X	X	X	X	X	X	X	X
CLH	15											
WEA	12	X	X	X	X	X	X	X	X	X	X	X
WND	9	X	X	X	X	X	X	X	X	X	X	X
TOD	1		X									
DOY	1		X									
Total number of possible predictors = 451												

TABLE B-31
MDA SELECTED PREDICTORS FOR ACY CIG

(a) 3-hr forecast

Order	Sta	Elem	Unit	Limits
1	ACY	CIG	ft	3000 ≤ CIG
2	ACY	CIG	ft	1000 ≤ CIG < 3000
3	PHL	CIG	ft	3000 ≤ CIG
4	ACY	CIG	ft	CIG < 200
5	DCA	CIG	ft	3000 ≤ CIG
6	MIV	WEA		Rain
7	ACY	CIG	ft	200 ≤ CIG < 300
8	MIV	CIG	ft	3000 ≤ CIG
9	MIV	CIG	ft	1000 ≤ CIG < 3000
10	NEL	WND	knots	5 < WND* ≤ 12
11	MIV	VIS	mi	VIS < 0.5
12	MDT	WEA		None
13	SBY	WEA		Fog
14	NEL	CIG	ft	3000 ≤ CIG
15	ACY	CLH	ft	100 ≤ CLH < 200
16		TOD	hr	0200 ≤ TOD ≤ 1300
17	ACY	CLH	ft	200 ≤ CLH < 300
18	MDT	CIG	ft	1000 ≤ CIG < 3000
19	MDT	WND	knots	5 < WND* ≤ 12
20	PHL	CIG	ft	1000 ≤ CIG < 3000
21				
22				
23				
24				
25				
26				
27				
28				
29				

*NNE through E.
†ESE through S.
‡SSW through WSW.

(b) 5-hr forecast

Order	Sta	Elem	Unit	Limits
1	PHL	CIG	ft	3000 ≤ CIG
2	ACY	CIG	ft	3000 ≤ CIG
3	DCA	CIG	ft	3000 ≤ CIG
4	ACY	CIG	ft	1000 ≤ CIG < 3000
5	MDT	WEA		Rain
6	ACY	CIG	ft	CIG < 200
7	MDT	WND	knots	5 < WND* ≤ 12
8	SBY	WEA		Fog
9	MIV	WEA		Rain
10	MDT	WEA		Snow
11	WRI	WND	knots	5 < WND* ≤ 12
12	MDT	CIG	ft	1000 ≤ CIG < 3000
13	PHL	CIG	ft	1000 ≤ CIG < 3000
14		TOD	hr	0200 ≤ TOD ≤ 1300
15	DCA	RLH	ft	89 < RLH
16	SBY	TCA	10ths	9 < TCA
17	NEL	WEA		Fog
18	PHL	WND	knots	12 < WND†
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				

*NNE through E.
†ESE through S.
‡SSW through WSW.

(c) 7-hr forecast

Order	Sta	Elem	Unit	Limits
1	PHL	CIG	ft	3000 ≤ CIG
2	DCA	CIG	ft	3000 ≤ CIG
3	ACY	TCA	10ths	9 < TCA
4	DCA	WEA		Rain
5	ACY	WEA		Fog
6	MDT	WND	knots	5 < WND* ≤ 12
7	ACY	CIG	ft	3000 ≤ CIG
8	MDT	WEA		None
9		TOD	hr	0200 ≤ TOD ≤ 1300
10	NEL	WND	knots	5 < WND* ≤ 12
11	ORF	RLH	ft	91 < RLH
12	DCA	CIG	ft	1000 ≤ CIG < 3000
13	MDT	TCA	10ths	9 < TCA
14	WRI	WND	knots	12 < WND*
15	WRI	WND	knots	12 < WND†
16	NEL	WEA		Fog
17	DCA	CIG	ft	CIG < 200
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				

*NNE through E.
†ESE through S.
‡SSW through WSW.

TABLE B-32
MDA SELECTED PREDICTORS FOR ACY VIS

(a) 3-hr forecast					(b) 5-hr forecast					(c) 7-hr forecast				
Order	Sta	Elem	Unit	Limits	Order	Sta	Elem	Unit	Limits	Order	Sta	Elem	Unit	Limits
1	ACY	VIS	mi	3 ≤ VIS	1	MTV	WEA		Fog	1	ACY	WEA		Fog
2	ACY	VIS	mi	VIS < 0.5	2	ACY	CIG	ft	CIG < 200	2	DCA	WEA		Fog
3	MTV	WEA		Fog	3	DCA	WEA		Fog	3		TOD	hr	0200 ≤ TOD ≤ 1300
4	MTV	VIS	mi	VIS < 0.5	4	ACY	RLH	%	94 < RLH	4	MDT	WEA		None
5	ACY	VIS	mi	0.5 ≤ VIS < 1	5	NEL	VIS	mi	3 < VIS	5	ACY	TCA	10hs	9 < TCA
6	SBY	VIS	mi	3 ≤ VIS	6		TOD	hr	0200 ≤ TOD ≤ 1300	6	MDT	WEA		Snow
7	ORF	VIS	mi	VIS < 0.5	7	DCA	WEA		Rain	7	DCA	WEA		Rain
8	MDT	WEA		None	8	MDT	WEA		Snow	8	ACY	RLH		94 < RLH
9	ACY	CLH	ft	CLH = 0	9	ACY	VIS	mi	0.5 ≤ VIS < 1	9				
10	NEL	VIS	mi	3 ≤ VIS	10	ACY	VIS	mi	VIS < 0.5	10				
11	MDT	WEA		Snow	11					11				
12		TOD	hr	0200 ≤ TOD ≤ 1300	12					12				
13	DCA	WEA		Fog	13					13				
14					14					14				
15					15					15				
16					16					16				
17					17					17				
18					18					18				
19					19					19				
20					20					20				
21					21					21				
22					22					22				
23					23					23				
24					24					24				
25					25					25				
26					26					26				
27					27					27				
28					28					28				
29					29					29				

*NNE through E.
†ESE through S.
‡SSW through WSW.

*NNE through E.
†ESE through S.
‡SSW through WSW.

*NNE through E.
†ESE through S.
‡SSW through WSW.

TABLE B-33
MDA SELECTED PREDICTORS FOR IDL CIG

(a) 2-hr forecast

Order	Sta	Elem	Unit	Limits
1	IDL	CIG	ft	3000 ≤ CIG
2	IDL	CIG	ft	1000 ≤ CIG < 3000
3	IDL	CIG	ft	500 ≤ CIG < 1000
4	NEL	CIG	ft	3000 ≤ CIG
5	NEL	CIG	ft	CIG < 200
6	MDT	CIG	ft	3000 ≤ CIG
7	TEB	CIG	ft	3000 ≤ CIG
8	NEL	CIG	ft	200 ≤ CIG < 500
9	IDL	VIS	mi	VIS < 0.5
10	TEB	CIG	ft	500 ≤ CIG < 1000
11	BDL	CIG	ft	1000 ≤ CIG < 3000
12	TEB	WEA		Rain
13	SBY	VIS	mi	3 ≤ VIS
14	IDL	RLH	'	92 < RLH
15	IDL	WND	knots	12 < WND*
16	IDL	WND	knots	5 < WND* ≤ 12
17	NEL	WND	knots	5 < WND† ≤ 12
18	IDL	WEA		Drizzle
19	MDT	WEA		Fog
20	FOK	CIG	ft	3000 ≤ CIG
21				
22				
23				
24				
25				
26				
27				
28				
29				

*NNE through E.
†ESE through S.
‡SSW through WSW.

(b) 3-hr forecast

Order	Sta	Elem	Unit	Limits
1	IDL	CIG	ft	3000 ≤ CIG
2	IDL	CIG	ft	1000 ≤ CIG < 3000
3	MDT	CIG	ft	3000 ≤ CIG
4	IDL	CIG	ft	500 ≤ CIG < 1000
5	NEL	CIG	ft	3000 ≤ CIG
6	NEL	CIG	ft	CIG < 200
7	IDL	RLH	'	92 < RLH
8	IDL	WND	knots	12 < WND*
9	NEL	CIG	ft	200 ≤ CIG < 500
10	BDL	TCA	10ths	9 < TCA
11	NEL	WEA		Rain
12	IDL	CIG	ft	CIG < 200
13	TEB	CIG	ft	3000 ≤ CIG
14	NEL	WEA		Drizzle
15	TEB	CIG	ft	500 ≤ CIG < 1000
16	IDL	WND	knots	5 < WND* ≤ 12
17	FOK	CIG	ft	CIG < 200
18	BDL	CIG	ft	1000 ≤ CIG < 3000
19	FOK	WND	knots	12 < WND†
20	PVD	WEA		Drizzle
21				
22				
23				
24				
25				
26				
27				
28				
29				

*NNE through E.
†ESE through S.
‡SSW through WSW.

TABLE B-33
MDA SELECTED PREDICTORS FOR IDL CIG

(c) 5-hr forecast

Order	Sta	Elem	Unit	Limits
1	IDL	CIG	ft	$3000 \leq \text{CIG}$
2	MDT	CIG	ft	$3000 \leq \text{CIG}$
3	IDL	CIG	ft	$1000 \leq \text{CIG} < 3000$
4	NEL	CIG	ft	$3000 \leq \text{CIG}$
5	IDL	CIG	ft	$500 \leq \text{CIG} < 1000$
6	IDL	WND	knots	$12 < \text{WND}^*$
7	FOK	TCA	10ths	$9 < \text{TCA}$
8	NEL	RLH	°	$93 < \text{RLH}$
9	BGM	WND	knots	$12 < \text{WND}^\dagger$
10	BGM	WND	knots	$5 < \text{WND}^\dagger \leq 12$
11	NEL	CIG	ft	$\text{CIG} < 200$
12	MDT	WEA		Rain
13	MDT	CIG	ft	$\text{CIG} < 200$
14	MDT	CIG	ft	$500 \leq \text{CIG} < 1000$
15		TOD	hr	$0200 \leq \text{TOD} \leq 1300$
16	MDT	WEA		Snow
17	BDL	CIG	ft	$1000 \leq \text{CIG} < 3000$
18	IDL	WND	knots	$5 < \text{WND}^* \leq 12$
19	NEL	CIG	ft	$200 \leq \text{CIG} < 500$
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				

*NNE through E.
†ESE through S.
‡SSW through WSW.

(d) 7-hr forecast

Order	Sta	Elem	Unit	Limits
1	NEL	CIG	ft	$3000 \leq \text{CIG}$
2	MDT	CIG	ft	$3000 \leq \text{CIG}$
3	IDL	CIG	ft	$3000 \leq \text{CIG}$
4	IDL	CIG	ft	$1000 \leq \text{CIG} < 3000$
5	MDT	WEA		Rain
6	BGM	WND	knots	$12 < \text{WND}^\dagger$
7	BGM	WND	knots	$5 < \text{WND}^\dagger \leq 12$
8	IDL	WND	knots	$12 < \text{WND}^*$
9	IDL	WND	knots	$5 < \text{WND}^* \leq 12$
10	BDL	TCA	10ths	$9 < \text{TCA}$
11		TOD	hr	$0200 \leq \text{TOD} \leq 1300$
12	IDL	CIG	ft	$200 \leq \text{CIG} < 500$
13	MDT	WEA		Fog
14	BGM	WND	knots	$5 < \text{WND}^* \leq 12$
15	NEL	VIS	mi	$\text{VIS} < 0.7$
16	NEL	WEA		Drizzle
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				

*NNE through E.
†ESE through S.
‡SSW through WSW.

TABLE B-34
MDA SELECTED PREDICTORS FOR IDL VIS

(a) 2-hr forecast

Order	Sta	Elem	Unit	Limits
1	IDL	VIS	mi	$3 \leq \text{VIS}$
2	IDL	VIS	mi	$\text{VIS} < 0.5$
3	NEL	CIG	ft	$\text{CIG} < 200$
4	IDL	VIS	mi	$2 \leq \text{VIS} < 3$
5	IDL	RLH	%	$92 < \text{RLH}$
6	NEL	VIS	mi	$3 \leq \text{VIS}$
7	TEB	VIS	mi	$\text{VIS} < 0.5$
8	IDL	VIS	mi	$0.5 \leq \text{VIS} < 1$
9	IDL	CIG	ft	$200 \leq \text{CIG} < 500$
10	NEL	VIS	mi	$\text{VIS} < 0.5$
11	IDL	WEA		Snow
12	MDT	VIS	mi	$\text{VIS} < 0.5$
13	IDL	WEA		Smoke
14	TEB	VIS	mi	$0.5 \leq \text{VIS} < 1$
15	ALB	CIG	ft	$\text{CIG} < 200$
16	IDL	WEA		Fog
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				

*NNE through E.
†ESE through S.
‡SSW through WSW.

(b) 3-hr forecast

Order	Sta	Elem	Unit	Limits
1	IDL	VIS	mi	$3 \leq \text{VIS}$
2	NEL	CIG	ft	$\text{CIG} < 200$
3	IDL	RLH	%	$92 < \text{RLH}$
4	IDL	VIS	mi	$\text{VIS} < 0.5$
5	IDL	VIS	mi	$0.5 \leq \text{VIS} < 1$
6	MDT	VIS	mi	$3 \leq \text{VIS}$
7	NEL	WEA		Snow
8	IDL	CIG	ft	$200 \leq \text{CIG} < 500$
9	FOK	VIS	mi	$\text{VIS} < 0.5$
10	MDT	VIS	mi	$\text{VIS} < 0.5$
11	IDL	WEA		None
12	TEB	CIG	ft	$\text{CIG} < 200$
13	NEL	WEA		Freezing Rain
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				

*NNE through E.
†ESE through S.
‡SSW through WSW.

TABLE B-34
MDA SELECTED PREDICTORS FOR IDL VIS

(c) 3-hr forecast

Order	Sta	Elem	Unit	Limits
1	IDL	RLH	%	92 < RLH
2	IDL	VIS	mi	3 ≤ VIS
3	NEL	CIG	ft	CIG < 200
4	MDT	VIS	mi	3 ≤ VIS
5	MDT	WEA		Snow
6	NEL	WEA		Freezing Rain
7	MDT	VIS	mi	VIS < 0.5
8	IDL	VIS	mi	VIS < 0.5
9	IDL	CIG	ft	200 ≤ CIG < 500
10	TEB	WEA		Smoke
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				

*NNE through E.
†ESE through S.
‡SSW through WSW.

(d) 7-hr forecast

Order	Sta	Elem	Unit	Limits
1	IDL	RLH	%	92 < RLH
2	MDT	VIS	mi	3 ≤ VIS
3	NEL	VIS	mi	VIS < 0.5
4	IDL	CIG	ft	200 ≤ CIG < 500
5	IDL	WEA		None
6	MDT	VIS	mi	VIS < 0.5
7	NEL	VIS	mi	0.5 ≤ VIS < 1
8				
9				
10				
11				
12				
13				
14				
15				
16				
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*NNE through E.
†ESE through S.
‡SSW through WSW.

TABLE B-35
MDA SELECTED PREDICTORS FOR WRI CIG

(a) 2-hr forecast					(b) 4-hr forecast					(c) 6-hr forecast				
Order	Sta	Elem	Unit	Limits	Order	Sta	Elem	Unit	Limits	Order	Sta	Elem	Unit	Limits
1	WRI	CIG	ft	5000 $\leq$ CIG	1	PHL	CIG	ft	5000 $\leq$ CIG	1	PHL	CIG	ft	5000 $\leq$ CIG
2	WRI	CIG	ft	1500 $\leq$ CIG $<$ 5000	2	PHL	CIG	ft	1500 $\leq$ CIG $<$ 5000	2	DCA	RLH	ft	98 $<$ RLH
3	WRI	CIG	ft	500 $\leq$ CIG $<$ 1500	3	EWR	TCA	10ths	9 $<$ TCA	3	EWR	TCA	10ths	9 $<$ TCA
4	PHL	CIG	ft	5000 $\leq$ CIG	4	DCA	RLH	ft	98 $<$ RLH	4	PHL	CIG	ft	1500 $\leq$ CIG $<$ 5000
5	WRI	CIG	ft	CIG $<$ 200	5	NEL	WEA		Fog	5	DCA	CIG	ft	5000 $\leq$ CIG
6	PHL	CIG	ft	1500 $\leq$ CIG $<$ 5000	6	WRI	CIG	ft	500 $\leq$ CIG $<$ 1500	6	PHL	WEA		Rain
7	EWR	CIG	ft	5000 $\leq$ CIG	7	PHL	WEA		Rain	7	ABE	CIG	ft	5000 $\leq$ CIG
8	PHL	WEA		Rain	8	ABE	CIG	ft	5000 $\leq$ CIG	8		TOD	hr	0200 $\leq$ TOD $\leq$ 1300
9	ACY	CIG	ft	500 $\leq$ CIG $<$ 1500	9	ACY	CIG	ft	CIG $<$ 200	9	NEL	WND	knots	5 $<$ WND* $\leq$ 12
10	ACY	CIG	ft	200 $\leq$ CIG $<$ 500	10	NEL	WND	knots	5 $<$ WND* $\leq$ 12	10	NEL	WEA		Fog
11	ACY	CIG	ft	CIG $<$ 200	11	DCA	CIG	ft	5000 $\leq$ CIG	11	IPT	TCA	10ths	9 $<$ TCA
12	ABE	TCA	10ths	9 $<$ TCA	12	WRI	CIG	ft	5000 $\leq$ CIG	12	WRI	WND	knots	12 $<$ WND*
13	NEL	CIG	ft	5000 $\leq$ CIG	13	WRI	CIG	ft	1500 $\leq$ CIG $<$ 5000	13	DCA	WEA		Rain
14	WRI	RLH		92 $<$ RLH	14		TOD	hr	0200 $\leq$ TOD $\leq$ 1300	14	ABE	WND	knots	12 $<$ WND*
15	NEL	CIG	ft	1500 $\leq$ CIG $<$ 5000	15	ACY	CIG	ft	500 $\leq$ CIG $<$ 1500	15	WRI	WND	knots	5 $<$ WND* $\leq$ 12
16	ABE	CIG	ft	500 $\leq$ CIG $<$ 1500	16	WRI	WND	knots	12 $<$ WND*	16	ACY	WEA		Fog
17	NEL	CIG	ft	500 $\leq$ CIG $<$ 1500	17	PHL	CIG	ft	500 $\leq$ CIG $<$ 1500	17	NEL	CIG	ft	500 $\leq$ CIG $<$ 1500
18	NEL	WND	knots	5 $<$ WND* $\leq$ 12	18	ACY	CIG	ft	200 $\leq$ CIG $<$ 500	18	ORF	RLH	ft	91 $<$ RLH
19	PHL	CIG	ft	CIG $<$ 200	19	IPT	TCA	10ths	9 $<$ TCA	19				
20	ABE	CIG	ft	5000 $\leq$ CIG	20	DCA	WEA		Rain	20				
21	ACY	WEA		Rain	21	ABE	CIG	ft	1500 $\leq$ CIG $<$ 5000	21				
22		TOD	hr	0200 $\leq$ TOD $\leq$ 1300	22					22				
23	DCA	RLH		91 $<$ RLH	23					23				
24					24					24				
25					25					25				
26					26					26				
27					27					27				
28					28					28				
29					29					29				

*NNE through E.
EENE through S.
SSW through WSW.

*NNE through E.
EENE through S.
SSW through WSW.

*NNE through E.
EENE through S.
SSW through WSW.

TABLE B-36
MDA SELECTED PREDICTORS FOR WRI VIS

(a) 2-hr forecast					(b) 4-hr forecast					(c) 6-hr forecast				
Order	Sta	Elem	Unit	Limits	Order	Sta	Elem	Unit	Limits	Order	Sta	Elem	Unit	Limits
1	WRI	VIS	mi	$5 \leq \text{VIS}$	1	WRI	VIS	mi	$5 \leq \text{VIS}$	1	WRI	VIS	mi	$5 \leq \text{VIS}$
2	WRI	VIS	mi	$3 \leq \text{VIS} < 5$	2	DCA	RLH	ft	$88 < \text{RLH}$	2	DCA	RLH	ft	$88 < \text{RLH}$
3	WRI	VIS	mi	$1 \leq \text{VIS} < 3$	3	WRI	RLH	ft	$92 < \text{RLH}$	3		TOD	hr	$0200 \leq \text{TOD} \leq 1300$
4	PHL	RLH	ft	$88 < \text{RLH}$	4	PHL	WEA		None	4	PHL	WEA		None
5	ACY	VIS	mi	$\text{VIS} < 0.5$	5	ACY	VIS	mi	$\text{VIS} < 0.5$	5	ABE	WEA		None
6	WRI	WEA		None	6		TOD	hr	$0200 \leq \text{TOD} \leq 1300$	6	ACY	WEA		Fog
7	NEL	VIS	mi	$\text{VIS} < 0.5$	7	NEL	VIS	mi	$5 \leq \text{VIS}$	7	DCA	VIS	mi	$5 \leq \text{VIS}$
8	PHL	VIS	mi	$5 \leq \text{VIS}$	8	ABE	WEA		None	8	DCA	WEA		Snow
9	NEL	WEA		Fog	9	ORF	RLH	ft	$91 < \text{RLH}$	9	DCA	RLH	ft	$64 < \text{RLH} \leq 88$
10	NEL	VIS	mi	$0.5 \leq \text{VIS} < 1$	10	PHL	CIG	ft	$200 < \text{CIG} < 300$	10	WRI	CIG	ft	$\text{CIG} < 200$
11	ORF	RLH	ft	$91 < \text{RLH}$	11	DCA	WEA		None	11	DCA	WEA		Rain
12	NEL	VIS	mi	$1 \leq \text{VIS} < 3$	12	WRI	VIS	mi	$\text{VIS} < 0.5$	12	NEL	RLH	ft	$92 < \text{RLH}$
13	WRI	CIG	ft	$\text{CIG} < 200$	13	ACY	WEA		Fog	13	NEL	RLH	ft	$72 < \text{RLH} \leq 92$
14	ABE	WEA		None	14	WRI	VIS	mi	$0.5 \leq \text{VIS} < 1$	14	ACY	WEA		Smoke
15		TOD	hr	$0200 \leq \text{TOD} \leq 1300$	15	PHL	VIS	mi	$5 \leq \text{VIS}$	15				
16	PHL	VIS	mi	$\text{VIS} < 0.5$	16	WRI	WEA		None	16				
17	PVD	WEA		Freezing Rain	17					17				
18	WRI	RLH	ft	$92 < \text{RLH}$	18					18				
19	WRI	WEA		Rain Showers	19					19				
20					20					20				
21					21					21				
22					22					22				
23					23					23				
24					24					24				
25					25					25				
26					26					26				
27					27					27				
28					28					28				
29					29					29				

*NNE through E.
†ESE through S.
‡SW through WSW.

*NNE through E.
†ESE through S.
‡SW through WSW.

*NNE through E.
†ESE through S.
‡SW through WSW.

TABLE B-37
MDA SELECTED PREDICTORS FOR OFF CIG

(a) 2-hr forecast					(b) 4-hr forecast					(c) 6-hr forecast				
Order	Sta	Elem	Unit	Limits	Order	Sta	Elem	Unit	Limits	Order	Sta	Elem	Unit	Limits
1	OFF	CIG	ft	5000 $\leq$ CIG	1	OFF	CIG	ft	5000 $\leq$ CIG	1	OFF	CIG	ft	5000 $\leq$ CIG
2	OFF	CIG	ft	1500 $\leq$ CIG $\leq$ 5000	2	OFF	CIG	ft	1500 $\leq$ CIG $\leq$ 5000	2	GRI	CIG	ft	5000 $\leq$ CIG
3	OFF	CIG	ft	CIG $<$ 300	3	GRI	CIG	ft	5000 $\leq$ CIG	3	OFF	CIG	ft	1500 $\leq$ CIG $<$ 5000
4	OFF	CIG	ft	300 $\leq$ CIG $<$ 1500	4	OFF	CIG	ft	CIG $<$ 300	4	GRI	CIG	ft	1500 $\leq$ CIG $<$ 5000
5	GRI	CIG	ft	5000 $\leq$ CIG	5	GRI	CIG	ft	1500 $\leq$ CIG $<$ 5000	5	OFF	CIG	ft	CIG $<$ 300
6	FSD	CIG	ft	5000 $\leq$ CIG	6	OFF	CIG	ft	300 $\leq$ CIG $<$ 1000	6	FSD	TCA	10ths	9 $<$ TCA
7	GRI	WEA		None	7	FSD	CIG	ft	5000 $\leq$ CIG	7	SSH	CIG	ft	5000 $\leq$ CIG
8	DSM	CIG	ft	5000 $\leq$ CIG	8	SSH	CIG	ft	5000 $\leq$ CIG	8	HON	CIG	ft	5000 $\leq$ CIG
9	FSD	CIG	ft	CIG $<$ 300	9	DSM	CIG	ft	CIG $<$ 300	9	DSM	RLH	ft	90 $<$ RLH
10	MKC	RLH	ft	85 $<$ RLH	10	OFF	TCA	10ths	9 $<$ TCA	10	SSH	CIG	ft	1500 $\leq$ CIG $<$ 5000
11	OFF	TCA	10ths	9 $<$ TCA	11	SSH	CIG	ft	1500 $\leq$ CIG $<$ 5000	11	FSD	WEA		Fog
12	GRI	CIG	ft	1500 $\leq$ CIG $<$ 5000	12	DSM	CIG	ft	5000 $\leq$ CIG	12	OFF	TGA	10ths	9 $<$ TGA
13	DSM	CIG	ft	CIG $<$ 300	13	FSD	CIG	ft	CIG $<$ 300	13		TOD	hr	0200 $\leq$ TOD $<$ 1300
14	OFF	WEA		Drizzle	14	OFF	VIS	mi	5 $\leq$ VIS	14	GRI	RLH	ft	88 $<$ RLH
15	SSH	CIG	ft	5000 $\leq$ CIG	15	GRI	CIG	ft	1000 $\leq$ CIG $<$ 1500	15	SGF	WND	knots	12 $<$ WND†
16	OFF	VIS	mi	5 $\leq$ VIS	16	FSD	CIG	ft	1500 $\leq$ CIG $<$ 5000	16	OFF	VIS	mi	5 $\leq$ VIS
17	FSD	CIG	ft	300 $\leq$ CIG $<$ 1000	17	SSH	CIG	ft	CIG $<$ 300	17	DSM	CIG	ft	5000 $\leq$ CIG
18					18	SGF	WND	knots	12 $<$ WND†	18	GRI	WEA		Drizzle
19					19					19				
20					20					20				
21					21					21				
22					22					22				
23					23					23				
24					24					24				
25					25					25				
26					26					26				
27					27					27				
28					28					28				
29					29					29				

*NNE through F.
†ESE through S.
‡SSW through WSW.

*NNE through F.
†ESE through S.
‡SSW through WSW.

*NNE through F.
†ESE through S.
‡SSW through WSW.

TABLE B-38
MDA SELECTED PREDICTORS FOR OFF VIS

(a) 2-hr forecast					(b) 4-hr forecast					(c) 6-hr forecast				
Order	Sta	Elem	Unit	Limits	Order	Sta	Elem	Unit	Limits	Order	Sta	Elem	Unit	Limits
1	OFF	VIS	mi	5 ≤ VIS	1	OFF	VIS	mi	5 ≤ VIS	1	OFF	VIS	mi	5 ≤ VIS
2	OFF	VIS	mi	VIS < 0.5	2	OFF	VIS	mi	3 ≤ VIS < 5	2	GRI	VIS	mi	5 ≤ VIS
3	OFF	VIS	mi	3 ≤ VIS < 5	3	OFF	VIS	mi	1 ≤ VIS < 3	3	OFF	CIG	ft	CIG < 300
4	GRI	VIS	mi	5 ≤ VIS	4	GRI	VIS	mi	5 ≤ VIS	4	SSH	VIS	mi	5 ≤ VIS
5	OFF	VIS	mi	0.5 ≤ VIS < 1	5	SSH	VIS	mi	5 ≤ VIS	5	FSD	VIS	mi	5 ≤ VIS
6	OFF	WEA		None	6	OFF	WEA		Fog	6	LBF	WEA		Snow
7	FSD	CIG	ft	CIG < 300	7	GRI	WEA		Snow	7	DSM	WEA		Fog
8	SSH	VIS	mi	5 < VIS	8	FSD	VIS	mi	5 ≤ VIS	8	OFF	WEA		Freezing rain
9	OFF	CIG	ft	CIG < 300	9	DSM	CIG	ft	CIG < 300	9	GRI	WEA		Drizzle
10	HON	VIS	mi	5 ≤ VIS	10	OFF	WEA		Freezing Rain	10	GRI	VIS	mi	VIS < 0.5
11	OFF	WEA		Fog	11	OFF	VIS	mi	VIS < 0.5	11	SSH	CIG	ft	CIG < 300
12	MLI	CIG	ft	CIG < 300	12	MKC	VIS	mi	VIS < 0.5	12	GRI	VIS	mi	0.5 ≤ VIS < 1
13	GRI	VIS	mi	0.5 ≤ VIS < 1	13	OFF	RLH	%	87 < RLH	13	OFF	VIS	mi	3 ≤ VIS < 5
14	DSM	VIS	mi	0.5 ≤ VIS < 1	14	FSD	CIG	ft	CIG < 300	14	GRI	WEA		Rain
15	SGF	VIS	mi	0.5 ≤ VIS < 1	15	GRI	VIS	mi	3 ≤ VIS < 5	15	MKC	CIG	ft	300 ≤ CIG < 1000
16	FSD	VIS	mi	VIS < 0.5	16					16		TOD	hr	0200 ≤ TOD ≤ 1300
17	GRI	WEA		Snow	17					17				
18					18					18				
19					19					19				
20					20					20				
21					21					21				
22					22					22				
23					23					23				
24					24					24				
25					25					25				
26					26					26				
27					27					27				
28					28					28				
29					29					29				

*NNE through E.
†ESE through S.
‡SSW through WSW.

*NNE through E.
†ESE through S.
‡SSW through WSW.

*NNE through E.
†ESE through S.
‡SSW through WSW.

TABLE B-39
MDA SELECTED PREDICTORS FOR RND CIG

(a) 2-hr forecast					(b) 4-hr forecast					(c) 6-hr forecast				
Order	Sta	Elem	Unit	Limits	Order	Sta	Elem	Unit	Limits	Order	Sta	Elem	Unit	Limits
1	RND	CIG	ft	5000 ≤ CIG	1	RND	CIG	ft	5000 ≤ CIG	1	RND	CIG	ft	5000 ≤ CIG
2	RND	CIG	ft	CIG < 200	2	RND	CIG	ft	1500 ≤ CIG < 5000	2	AUS	WEA		Fog
3	RND	CIG	ft	1500 ≤ CIG < 5000	3	RND	CIG	ft	400 ≤ CIG < 1500	3	CRP	RLH	%	81 < RLH ≤ 95
4	RND	CIG	ft	200 ≤ CIG < 400	4	CRP	RLH	%	81 < RLH ≤ 95	4	CRP	RLH	%	95 < RLH
5	RND	CTL		Stratus	5	CRP	RLH	%	95 < RLH	5		TOD	hr	0200 ≤ TOD ≤ 1300
6	AUS	CIG	ft	5000 ≤ CIG	6	AUS	TCA	10ths	9 < TCA	6	AUS	TCA	10ths	9 < TCA
7	RND	RLH	%	91 < RLH	7	RND	CIG	ft	CIG < 200	7	RND	WEA		Drizzle
8	RND	RLH	%	71 < RLH ≤ 91	8	DLF	CIG	ft	5000 ≤ CIG	8	DLF	CIG	ft	500 ≤ CIG
9	LRD	CIG	ft	5000 ≤ CIG	9		TOD	hr	0200 ≤ TOD ≤ 1300	9	RND	CIG	ft	CIG < 200
10	CRP	RLH	%	59 < RLH ≤ 81	10	RND	CTL		Stratus	10	RND	CIG	ft	200 ≤ CIG < 400
11	CRP	RLH	%	RLH ≤ 59	11	RND	CTL		Stratocumulus	11	ACF	WND	knots	12 < WND†
12	AUS	CIG	ft	CIG < 200	12	RND	WEA		Drizzle	12	ACF	TCA	10ths	9 < TCA
13	RND	CLH	ft	1000 ≤ CLH < 1500	13	ACF	WND	knots	12 < WND†	13	BRO	RLH	%	RLH ≤ 59
14	AUS	CIG	ft	200 ≤ CIG < 400	14	LRD	CIG	ft	5000 ≤ CIG	14	RND	CTL		Stratus
15	RND	WEA		Drizzle	15	AUS	RLH	%	91 < RLH	15	LRD	CIG	ft	5000 ≤ CIG
16	RND	CLH	ft	CLH < 100	16	AUS	CIG	ft	5000 ≤ CIG	16	LRD	WND	knots	12 < WND†
17		TOD	hr	0200 ≤ TOD ≤ 1300	17	AUS	CIG	ft	CIG < 200	17	CRP	WEA		Fog
18	CRP	WEA		Fog	18	LRD	VIS	mi	1 ≤ VIS < 3	18	RND	CIG	ft	400 ≤ CIG < 1500
19	ACF	CIG	ft	5000 ≤ CIG	19					19				
20	EFD	RLH	%	95 < RLH	20					20				
21	ACF	WND	knots	12 < WND†	21					21				
22	RND	CLH	ft	600 ≤ CLH < 700	22					22				
23	RND	CLH	ft	200 ≤ CLH < 300	23					23				
24					24					24				
25					25					25				
26					26					26				
27					27					27				
28					28					28				
29					29					29				

*NNE through E.
†ESE through S.
‡SSW through WSW.

*NNE through E.
†ESE through S.
‡SSW through WSW.

*NNE through E.
†ESE through S.
‡SSW through WSW.

TABLE B-40
MDA SELECTED PREDICTORS FOR RND VIS

(a) 2-hr forecast

Order	Sta	Elem	Unit	Limits
1	RND	VIS	mi	$5 \leq \text{VIS}$
2	RND	CTL		Thin fog and fog
3	RND	RLH	%	$91 < \text{RLH}$
4	RND	VIS	mi	$3 \leq \text{VIS} < 5$
5	RND	VIS	mi	$\text{VIS} < 0.5$
6	AUS	CIG	ft	$\text{CIG} < 200$
7	LRD	WEA		Fog
8	AUS	VIS	mi	$5 \leq \text{VIS}$
9	RND	CIG	ft	$200 \leq \text{CIG} < 400$
10	RND	CIG	ft	$\text{CIG} < 200$
11	RND	WEA		None
12	RND	CLH	ft	$\text{CLH} < 100$
13	EFD	CIG	ft	$\text{CIG} < 200$
14	RND	WEA		Thunder, hail
15	AUS	VIS	mi	$3 \leq \text{VIS} < 5$
16	ACF	CIG	ft	$\text{CIG} < 200$
17	RND	CLH	ft	$200 \leq \text{CLH} < 300$
18	RND	CLH	ft	$100 \leq \text{CLH} < 200$
19	DLF	VIS	mi	$0.5 \leq \text{VIS} < 1$
20	CRP	VIS	mi	$3 \leq \text{VIS} < 5$
21				
22				
23				
24				
25				
26				
27				
28				
29				

*NNE through E.
†ESE through S.
‡SSW through WSW.

(b) 4-hr forecast

Order	Sta	Elem	Unit	Limits
1	RND	WEA		Fog
2	RND	CIG	ft	$\text{CIG} < 200$
3	AUS	WEA		None
4	RND	CIG	ft	$200 \leq \text{CIG} < 400$
5	LRD	VIS	mi	$5 \leq \text{VIS}$
6	RND	RLH	%	$91 < \text{RLH}$
7	AUS	CIG	ft	$\text{CIG} < 200$
8	DLF	WEA		None
9	RND	WEA		Smoke
10	RND	WEA		Drizzle
11	CRP	WEA		None
12	RND	CLH	ft	$300 \leq \text{CLH} < 400$
13	RND	VIS	mi	$1 < \text{VIS} < 3$
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				

*NNE through E.
†ESE through S.
‡SSW through WSW.

(c) 6-hr forecast

Order	Sta	Elem	Unit	Limits
1	RND	WEA		Fog
2	RND	WEA		Drizzle
3	RND	CIG	ft	$\text{CIG} < 200$
4	CRP	WEA		None
5	RND	CIG	ft	$200 \leq \text{CIG} < 400$
6	LRD	VIS	mi	$5 \leq \text{VIS}$
7	AUS	TCA	10ths	$9 < \text{TCA}$
8	DLF	WEA		None
9		TOD	hr	$0200 \leq \text{TOD} \leq 1300$
10	AUS	RLH	%	$91 < \text{RLH}$
11	AUS	RLH	%	$71 < \text{RLH} \leq 91$
12	ACF	VIS	mi	$0.5 \leq \text{VIS} < 1$
13	AUS	WEA		Drizzle
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				

*NNE through E.
†ESE through S.
‡SSW through WSW.

TABLE B-41
MDA SELECTED PREDICTORS FOR DCA CIG

(a) 2-hr forecast

Order	Sta	Elem	Unit	Limits
1	DCA	CIG	ft	3000 - CIG
2	DCA	CIG	ft	1000 - CIG 3000
3	DCA	CIG	ft	CIG < 200
4	MRB	CIG	ft	3000 - CIG
5	DCA	CIG	ft	200 - CIG < 500
6	GVE	WEA		Fog
7	NHK	CIG	ft	CIG < 200
8	MRB	CIG	ft	CIG < 200
9	DCA	WEA		Fog
10	DCA	CLH	ft	300 - CLH 100
11	GVE	CIG	ft	3000 - CIG
12	NHK	CIG	ft	200 - CIG 500
13	ANP	CIG	ft	3000 - CIG
14	ROA	RLH		90 - RLH
15	ACY	CIG	ft	CIG 200
16	MRB	CIG	ft	1000 - CIG < 3000
17	GVE	VIS	mi	VIS < 0.5
18	DCA	CTL		Stratus
19	DCA	CLH	ft	200 - CLH 500
20	GVE	CIG	ft	200 - CIG 500
21	ANP	WEA		Rain
22	NHK	CIG	ft	500 - CIG < 1000
23	DCA	CLH	ft	500 - CLH 500
24	DCA	CLH	ft	600 - CLH 700
25		TOD	hr	0200 - TOD 1300
26	ROA	CIG	ft	3000 - CIG
27	DCA	CLH	ft	3000 - CLH 1500
28				
29				

*NNE through E.
†ESE through S.
‡SSW through WSW.

(b) 3-hr forecast

Order	Sta	Elem	Unit	Limits
1	DCA	CIG	ft	3000 - CIG
2	DCA	CIG	ft	1000 - CIG 3000
3	MRB	CIG	ft	3000 - CIG
4	DCA	CIG	ft	500 - CIG < 3000
5	GVE	WEA		Fog
6	NHK	CIG	ft	CIG 200
7	DCA	CIG	ft	CIG 200
8	ROA	WEA		Fog
9	NHK	CIG	ft	3000 - CIG
10	DCA	WEA		Fog
11	MRB	CIG	ft	1000 - CIG 3000
12	MRB	CIG	ft	500 - CIG 1000
13	DCA	CLH	ft	300 - CLH 500
14	ORF	RLH		91 - RLH
15	MRB	WEA		None
16		TOD	hr	0200 - TOD < 1300
17	ANP	WND	knots	5 - WND* < 12
18	NHK	CIG	ft	200 - CIG 500
19	MRB	CIG	ft	CIG 200
20	DCA	CLH	ft	200 - CLH 500
21	DCA	WEA		Rain
22	DCA	CLH	ft	1000 - CLH 1500
23	ACY	WEA		Drizzle
24	ACY	VIS	mi	0 - VIS
25	DCA	CLH	ft	500 - CLH 500
26	MRB	WEA		Fog
27	ROA	CIG	ft	3000 - CIG < 3000
28	IPT	WND	knots	12 - WND
29	IPT	WND	knots	12 - WND < 12

*NNE through E.
†ESE through S.
‡SSW through WSW.

TABLE B-41
MDA SELECTED PREDICTORS FOR DCA CIG

(c) 5-hr forecast

Order	Sta	Elem	Unit	Limits
1	DCA	CIG	ft	3000 $\leq$ CIG
2	ROA	WEA		Fog
3	DCA	CIG	ft	1500 $\leq$ CIG $<$ 3000
4	MRB	CIG	ft	3000 $\leq$ CIG
5	MRB	CIG	ft	CIG $<$ 200
6	ORF	RLH	ft	91 $<$ RLH
7	NHK	CIG	ft	CIG $<$ 200
8	GVE	CIG	ft	3000 $\leq$ CIG
9		TOD	hr	0200 $\leq$ TOD $<$ 1300
10	ANP	WND	knots	5 $<$ WND* $\leq$ 12
11	MRB	WEA		None
12	DCA	CLH	ft	CLH $<$ 100
13	DCA	WEA		Drizzle
14	DCA	WEA		Rain
15	DCA	CIG	ft	500 $\leq$ CIG $<$ 1000
16	GVE	CIG	ft	200 $\leq$ CIG $<$ 500
17	ANP	TCA	10ths	9 $<$ TCA
18	DCA	CLH	ft	300 $\leq$ CLH $<$ 400
19	IPT	WEA		Freezing rain
20	ROA	CIG	ft	CIG $<$ 200
21	ACY	RLH	ft	95 $<$ RLH
22	ROA	CIG	ft	3000 $\leq$ CIG
23				
24				
25				
26				
27				
28				
29				

*NNE through E.
†ESE through S.
‡SSW through WSW.

(d) 7-hr forecast

Order	Sta	Elem	Unit	Limits
1	DCA	CIG	ft	3000 $\leq$ CIG
2	ROA	CIG	ft	3000 $\leq$ CIG
3	MRB	CIG	ft	3000 $\leq$ CIG
4	NHK	CIG	ft	CIG $<$ 200
5		TOD	hr	0200 $\leq$ TOD $\leq$ 1300
6	ACY	TCA	10ths	9 $<$ TCA
7	ROA	CIG	ft	1000 $\leq$ CIG $<$ 3000
8	ANP	WND	knots	5 $<$ WND* $\leq$ 12
9	ORF	RLH	ft	91 $<$ RLH
10	MRB	WEA		Rain
11	DCA	CIG	ft	1000 $\leq$ CIG $<$ 3000
12	ANP	VIS	mi	VIS $<$ 0.5
13	MRB	WEA		Freezing rain
14	MRB	WEA		None
15	MRB	WEA		Drizzle
16	GVE	WEA		Rain
17	ANP	CIG	ft	CIG $<$ 200
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				

*NNE through E.
†ESE through S.
‡SSW through WSW.

TABLE B-42
MDA SELECTED PREDICTORS FOR DCA VIS

(a) 2-hr forecast

Order	Sta	Elem	Unit	Limits
1	DCA	VIS	mi	3 ≥ VIS
2	DCA	VIS	mi	VIS ≥ 0.5
3	DCA	WFA		Fog
4	DCA	VIS	mi	2 ≥ VIS
5	NHK	VIS	mi	VIS ≥ 0.5
6	DCA	CIG	ft	CIG ≥ 200
7	DCA	CLH	ft	200 ≥ CLH ≥ 500
8	MRB	VIS	mi	3 ≥ VIS
9	MRB	CIG	ft	CIG ≥ 200
10	GVF	WFA		Snow
11	ACY	VIS	mi	VIS ≥ 0.5
12	ACY	WFA		Freezing rain
13	DCA	VIS	mi	0.5 ≥ VIS ≥ 1
14	MRB	CIG	ft	200 ≥ CIG ≥ 500
15	NHK	WFA		Drizzle
16	GVF	VIS	mi	VIS ≥ 0.5
17	DCA	CLH	ft	100 ≥ CLH ≥ 500
18	GVF	CR		CIG ≥ 200
19	DCA	WFA		Snow
20	ROA	VIS	mi	1 ≥ VIS
21	DCA	CTH		Thin fog and fog
22	DCA	CLH	ft	300 ≥ CLH ≥ 400
23	NHK	CIG	ft	CIG ≥ 200
24	NHK	WFA		Freezing rain
25				
26				
27				
28				
29				

*NNL through L
*E/F through S
*SW through WSW

(b) 3-hr forecast

Order	Sta	Elem	Unit	Limits
1	DCA	VIS	mi	3 ≥ VIS
2	DCA	CIG	ft	CIG ≥ 200
3	DCA	WFA		Fog
4	ANP	VIS	mi	VIS ≥ 0.5
5	GVF	WFA		Snow
6	MRB	CIG	ft	CIG ≥ 200
7	MRB	CIG	ft	200 ≥ CIG ≥ 500
8	NHK	CIG	ft	CIG ≥ 200
9	NHK	WFA		Snow showers
10	DCA	VIS	mi	2 ≥ VIS ≥ 3
11	ROA	VIS	mi	1 ≥ VIS
12	DCA	VIS	mi	1 ≥ VIS ≥ 2
13	NHK	WFA		Freezing rain
14	DCA	CLH	ft	300 ≥ CLH ≥ 400
15	DCA	CIG	ft	200 ≥ CIG ≥ 500
16	DCA	WFA		Snow showers
17	DCA	WFA		Drizzle
18	DCA	WFA		Snow
19	ACY	VIS	mi	VIS ≥ 0.5
20	NHK	WFA		Snow
21	MRB	WFA		Snow
22	ANP	WFA		Snow showers
23	ANP	CIG	ft	CIG ≥ 200
24	ROA	CIG	ft	CIG ≥ 200
25	MRB	VIS	mi	3 ≥ VIS
26				
27				
28				
29				

*NNL through E.
*ESE through S.
*SSW through WSW

TABLE B-42
MDA SELECTED PREDICTORS FOR DCA VIS

(c) 5-hr forecast

Order	Sta	Elem	Unit	Limits
1	DCA	WEA		Fog
2	DCA	VIS	mi	VIS < 0.5
3	MRB	VIS	mi	3 ≤ VIS
4	NHK	VIS	mi	VIS < 0.5
5	ROA	VIS	mi	3 ≤ VIS
6	MRB	CIG	ft	CIG > 200
7	MRB	CIG	ft	200 < CIG < 500
8	DCA	WEA		None
9	ACY	WEA		Freezing rain
10	ROA	CIG	ft	CIG > 200
11	GVE	WEA		Snow
12	GVI	WEA		Freezing rain
13	DCA	CLN	ft	CLN < 100
14	DCA	CIG	ft	200 < CIG < 500
15	NHK	VIS	mi	1 < VIS < 2
16	ACY	WEA		Drizzle
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				

*NNE through E.
†ESE through S.
‡SSW through WSW.

(d) 7-hr forecast

Order	Sta	Elem	Unit	Limits
1	DCA	WEA		Fog
2	NHK	VIS	mi	VIS < 0.5
3	ROA	WEA		Fog
4	DCA	WEA		None
5	ANP	VIS	mi	VIS < 0.5
6	GVE	WEA		Freezing rain
7	MRB	WEA		Drizzle
8	NHK	VIS	mi	1 < VIS < 2
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				

*NNE through E.
†ESE through S.
‡SSW through WSW.

TABLE B-43
MDA SELECTED PREDICTORS FOR CEF CIG

(a) 2-hr forecast

Order	Sta	Elem	Unit	Limits
1	CEF	CIG	ft	5000 $\leq$ CIG
2	CEF	CIG	ft	1500 $\leq$ CIG < 5000
3	CEF	CIG	ft	CIG < 200
4	BDL	CIG	ft	5000 $\leq$ CIG
5	BDL	CIG	ft	1500 $\leq$ CIG < 5000
6	CEF	CIG	ft	200 $\leq$ CIG < 600
7	ALB	CIG	ft	5000 $\leq$ CIG
8	IDL	RLH	%	92 < RLH
9	BDL	CIG	ft	600 $\leq$ CIG < 1500
10	IDL	VIS	mi	VIS $\leq$ 0.5
11	BDL	CIG	ft	CIG $\geq$ 200
12	CEF	TCA	10ths	9 < TCA
13	ALB	CIG	ft	1500 $\leq$ CIG < 5000
14	IDL	CIG	ft	5000 $\leq$ CIG
15	ALB	WEA		None
16	PVD	WEA		Drizzle
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				

*NNE through E.
†ESE through S.
‡SSW through WSW.

(b) 3-hr forecast

Order	Sta	Elem	Unit	Limits
1	BDL	CIG	ft	5000 $\leq$ CIG
2	BDL	CIG	ft	1500 $\leq$ CIG < 5000
3	CEF	CIG	ft	CIG < 200
4	CEF	CIG	ft	5000 $\leq$ CIG
5	CEF	CIG	ft	1500 $\leq$ CIG < 5000
6	IDL	RLH	%	92 < RLH
7	ALB	CIG	ft	5000 $\leq$ CIG
8	BDL	CIG	ft	CIG $\geq$ 200
9	CEF	CIG	ft	200 $\leq$ CIG < 600
10	IDL	VIS	mi	VIS $\leq$ 0.5
11	CEF	TCA	10ths	9 < TCA
12	ALB	CIG	ft	1500 $\leq$ CIG < 5000
13	IDL	CIG	ft	5000 $\leq$ CIG
14	BDL	CIG	ft	200 $\leq$ CIG < 600
15	ALB	CIG	ft	CIG $\geq$ 200
16	AVP	WEA		None
17	PVD	CIG	ft	5000 $\leq$ CIG
18	BTW	WND	knots	12 $\leq$ WND†
19		TOD	hr	0200 $\leq$ TOD $\leq$ 1300
20	PVD	WEA		Drizzle
21	CEF	VIS	mi	0.5 $\leq$ VIS < 1
22	IDL	CIG	ft	1500 $\leq$ CIG < 5000
23				
24				
25				
26				
27				
28				
29				

*NNE through E.
†ESE through S.
‡SSW through WSW.

TABLE B-43
MDA SELECTED PREDICTORS FOR CEF CIG

(c) 4-hr forecast

Order	Sta	Elem	Unit	Limits
1	BDL	CIG	ft	5000 $\leq$ CIG
2	BDL	CIG	ft	1500 $\leq$ CIG $<$ 5000
3	CEF	CIG	ft	CIG $<$ 200
4	ALB	TCA	10ths	9 $<$ TCA
5	IDL	RLH	?	92 $<$ RLH
6	CEF	CIG	ft	5000 $\leq$ CIG
7	CEF	CIG	ft	1500 $\leq$ CIG $<$ 5000
8	IDL	CIG	ft	5000 $\leq$ CIG
9	BDL	CIG	ft	600 $\leq$ CIG $<$ 1500
10	ALB	CIG	ft	5000 $\leq$ CIG
11	BDL	VIS	mi	VIS $\geq$ 0.5
12	IDL	CIG	ft	1500 $\leq$ CIG $<$ 5000
13	IDL	VIS	mi	VIS $<$ 0.5
14	AVP	WEA		None
15	PVD	CIG	ft	5000 $\leq$ CIG
16	ALB	CIG	ft	1500 $\leq$ CIG $<$ 5000
17		TOD	hr	0200 $\leq$ TOD $\leq$ 1300
18	CEF	CIG	ft	200 $\leq$ CIG $<$ 600
19	BTW	WND	knots	12 $<$ WND†
20	BTW	WND	knots	5 $<$ WND† $\leq$ 12
21	CEF	TCA	10ths	9 $<$ TCA
22				
23				
24				
25				
26				
27				
28				
29				

*NNE through E.
†ESE through S.
‡SSW through WSW.

(d) 6-hr forecast

Order	Sta	Elem	Unit	Limits
1	BDL	CIG	ft	5000 $\leq$ CIG
2	BDL	CIG	ft	1500 $\leq$ CIG $<$ 5000
3	ALB	TCA	10ths	9 $<$ TCA
4	IDL	CIG	ft	5000 $\leq$ CIG
5	CEF	CIG	ft	CIG $<$ 200
6	AVP	WEA		None
7	IDL	RLH		92 $<$ RLH
8	BTW	WND	knots	5 $<$ WND† $\leq$ 12
9	CEF	TCA	10ths	9 $<$ TCA
10	CEF	CIG	ft	200 $\leq$ CIG $<$ 600
11	SYR	WND	knots	12 $<$ WND†
12	PVD	CIG	ft	5000 $\leq$ CIG
13		TOD	hr	0200 $\leq$ TOD $\leq$ 1300
14	SYR	RLH		90 $<$ RLH
15	PWM	WND	knots	5 $<$ WND* $\leq$ 12
16	BTW	WND	knots	12 $<$ WND†
17	ALB	CIG	ft	1500 $\leq$ CIG $<$ 5000
18	ALB	CIG	ft	5000 $\leq$ CIG
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				

*NNE through E.
†ESE through S.
‡SSW through WSW.

TABLE B-44
MDA SELECTED PREDICTORS FOR CEF VIS

(a) 2-hr forecast

Order	Sta	Elem	Unit	Limits
1	CPF	VIS	mi	5 ≤ VIS
2	CEF	VIS	mi	VIS < 0.5
3	BDL	VIS	mi	5 ≤ VIS
4	CEF	VIS	mi	0.5 ≤ VIS 1
5	CEF	VIS	mi	1 ≤ VIS 5
6	IDL	RLH		92 RLH
7	BDI	VIS	mi	VIS < 0.5
8	ALB	VIS	mi	5 ≤ VIS
9	BDI	VIS	mi	0.5 ≤ VIS 1
10	BDI	WEA		None
11	BDI	VIS	mi	1 ≤ VIS 5
12	IDL	VIS	mi	VIS < 0.5
13	BDI	WEA		Snow
14	CEF	WEA		None
15	ALB	VIS	mi	5 ≤ VIS 5
16	CEF	CIG	ft	200 ≤ CIG 600
17	CEF	CIG	ft	CIG 200
18	CEF	CIG	ft	600 ≤ CIG 1500
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				

*NNE through E.
ESE through S.
SSW through WSW.

(b) 3-hr forecast

Order	Sta	Elem	Unit	Limits
1	CEF	VIS	mi	5 ≤ CIG
2	CEF	VIS	mi	VIS < 0.5
3	BDL	VIS	mi	5 ≤ VIS
4	CEF	VIS	mi	0.5 ≤ VIS 1
5	IDL	RLH		92 RLH
6	BDI	VIS	mi	VIS < 0.5
7	ALB	VIS	mi	5 ≤ VIS
8	BDI	WEA		None
9	CEF	VIS	mi	1 ≤ VIS 5
10	WV	WEA		Snow
11	IDL	VIS	mi	VIS < 0.5
12	BDI	VIS	mi	0.5 ≤ VIS 1
13	IDL			72 RLH 92
14	ALB	CIG	ft	CIG 200
15	ACY	WIND	knots	5 WIND 12
16	ALB	WEA		Freezing Rain
17	CEF	CIG	ft	CIG 200
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				

*NNE through E.
ESE through S.
SSW through WSW.

TABLE B-44
MDA SELECTED PREDICTORS FOR CEF VIS

(c) 4-hr forecast

(d) 6-hr forecast

Order	Sta	Elem	Unit	Limits
1	BDL	VIS	mi	$5 \leq \text{VIS}$
2	CEF	VIS	mi	$5 \leq \text{VIS}$
3	BDL	VIS	mi	$\text{VIS} < 0.5$
4	IDL	RLH	°	$92 < \text{RLH}$
5	ALB	WEA		None
6	CEF	VIS	mi	$\text{VIS} < 0.5$
7	AVP	WEA		Snow
8	IDL	RLH	°	$72 < \text{RLH} \leq 92$
9	CEF	VIS	mi	$0.5 < \text{VIS} < 1$
10	IDL	VIS	mi	$\text{VIS} < 0.5$
11	BDL	WEA		None
12	IDL	WEA		Freezing rain
13	AVP	VIS	mi	$\text{VIS} < 0.5$
14	BDL	VIS	mi	$3 \leq \text{VIS} < 5$
15	BDL	WEA		Freezing rain
16	ALB	WEA		Fog
17	ALP	WND	knots	$5 < \text{WND} \leq 12$
18	AVP	CIG	ft	$\text{CIG} < 200$
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				

*NNE through E.
†ESE through S.
‡SSW through WSW.

Order	Sta	Elem	Unit	Limits
1	BDL	WEA		None
2	IDL	RLH	°	$92 < \text{RLH}$
3	IDL	RLH	°	$72 < \text{RLH} \leq 92$
4	CEF	VIS	mi	$5 \leq \text{VIS}$
5	CEF	VIS	mi	$\text{VIS} < 0.5$
6	AVP	WEA		Snow
7	AVP	WEA		None
8	BDL	VIS	mi	$5 < \text{VIS}$
9	ACY	WND	knots	$5 < \text{WND} \leq 12$
10	IDL	WEA		Fog
11	ALB	TCA	10ths	9 TCA
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				

*NNE through E.
†ESE through S.
‡SSW through WSW.

APPENDIX C
CONTINGENCY TABLES OF FORECAST vs OBSERVED

APPENDIX C. CONTINGENCY TABLES OF FORECAST vs OBSERVED

An illustration of the contingency tables presented here is given in Table 2-1 of this supplement. The class limits for the predictand categories are given in Table 2-1 of the main body of the report [7]. The tables are presented simply to complete the evaluation; no discussion of them is given below. However, two cautionary notes are important.

First, a weight function is designed to maximize a specific score, and the forecasts are verified by that score only. The same forecasts may appear highly inaccurate when measured by another score. For example, the Vernon skill score may be quite good on a Vernon-weight-function contingency table, yet the percentage of hits could be considerably less than that obtained by the simple forecast method of always forecasting group 5. There is no inconsistency here. A series of forecasts is perfect in only one way (hitting every forecast), but there is an astronomical number of ways in which forecasts can be incorrect. All verification scores are concerned with measurement of these errors. Different scores measure the errors in different ways, so it should not be too surprising that they sometimes give conflicting results.

Second, it is not proper to reduce the number of classes of a predictand by collapsing a 5×5 contingency table to a smaller table by adding the entries in adjacent rows and columns. For example, two classes of low ceiling consisting of less than 200 ft and 200 to less than 500 ft might be collapsed into one class of less than 500 ft by adding the entries in rows 1 and 2 and in columns 1 and 2 of a contingency table. However, it is not valid to do this for any forecast technique producing probability forecasts. The proper procedure is to go back to the probability forecasts and add the probabilities for the two low classes. If $f_1, \dots, f_5$ are forecast probabilities, then both f_1 and f_2 could be less than f_5 , say, but $f_1 + f_2$ might be larger. We have found that contingency tables obtained by collapsing may be substantially different from contingency tables obtained by going back to the original probability forecasts.

VERIFICATION OF 3 HOUR CEILING FORECASTS
ATLANTIC CITY, N.J. AIRPORT
THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	2	6	3	0	3	14
2	0	16	9	2	4	31
3	1	3	11	8	3	26
4	1	2	5	12	11	31
5	1	5	4	16	553	579
TOTAL	5	32	32	38	574	681

BRYAN SCORE 0.31652

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	2	0	0	0	2
2	3	16	7	2	6	34
3	0	11	13	5	9	38
4	0	1	6	17	19	43
5	2	2	6	14	540	564
TOTAL	5	32	32	38	574	681

BRYAN SCORE 0.34322

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	2	6	3	0	3	14
2	0	12	6	0	2	20
3	1	7	14	10	5	37
4	1	2	5	12	11	31
5	1	5	4	16	553	579
TOTAL	5	32	32	38	574	681

BRYAN SCORE 0.31049

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	1	3	1	0	1	6
2	1	2	5	0	6	14
3	0	10	12	6	8	36
4	2	12	13	22	157	206
5	1	5	1	10	402	419
TOTAL	5	32	32	38	574	681

BRYAN SCORE 0.20304

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	2	22	12	2	7	45
3	0	2	4	5	2	17
4	2	3	9	22	85	121
5	1	5	3	9	480	498
TOTAL	5	32	32	38	574	681

BRYAN SCORE 0.34747

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	2	7	4	1	5	19
2	0	13	6	1	1	21
3	1	4	13	7	6	31
4	1	5	7	23	52	88
5	1	1	2	6	510	520
TOTAL	5	32	32	38	574	681

BRYAN SCORE 0.34747

VERIFICATION OF 5 HOUR CEILING FORECASTS
ATLANTIC CITY, N.J. AIRPORT
THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	2	2	9	14
2	1	12	6	5	6	30
3	1	3	5	10	5	24
4	1	4	6	11	9	31
5	2	0	5	25	520	552
TOTAL	5	20	24	53	549	651

BRYAN SCORE

0.23138

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	0	0	0	1
2	3	11	8	4	3	29
3	1	8	8	13	10	40
4	0	0	6	16	18	42
5	1	0	2	18	518	539
TOTAL	5	20	24	53	549	651

BRYAN SCORE

0.29871

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	1	1	0	4	6
2	1	9	4	2	3	19
3	1	6	8	15	13	43
4	1	4	6	11	9	31
5	2	0	5	25	520	552
TOTAL	5	20	24	53	549	651

BRYAN SCORE

0.23176

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	1	2	0	8	11
2	0	5	6	4	3	18
3	0	6	6	5	6	23
4	3	8	10	32	110	163
5	2	0	0	12	422	436
TOTAL	5	20	24	53	549	651

BRYAN SCORE

0.28318

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	1	13	8	7	15	44
3	2	7	14	27	79	129
4	0	0	1	4	37	42
5	2	0	1	15	418	436
TOTAL	5	20	24	53	549	651

BRYAN SCORE

0.18983

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	1	2	5	12	18
2	0	4	1	2	1	12
3	1	7	12	11	5	36
4	2	4	7	28	89	130
5	2	0	2	9	442	455
TOTAL	5	20	24	53	549	651

BRYAN SCORE

0.27771

VERIFICATION OF 7 HOUR CEILING FORECASTS
ATLANTIC CITY, N.J. AIRPORT
THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	2	2	10	15
2	1	11	7	3	11	33
3	0	4	5	8	8	25
4	2	2	9	10	11	34
5	5	3	15	28	518	563
TOTAL	8	21	38	51	558	676

BRYAN SCORE 0.19418

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	0	1	1	3
2	3	10	12	2	6	33
3	0	8	9	10	10	37
4	0	0	11	17	22	50
5	5	2	6	21	519	553
TOTAL	8	21	38	51	558	676

BRYAN SCORE 0.27053

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	1	2	0	4	7
2	1	8	6	1	5	21
3	0	7	4	7	10	28
4	2	3	12	23	142	182
5	5	2	14	20	397	438
TOTAL	8	21	38	51	558	676

BRYAN SCORE 0.18786

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	1	1
2	1	3	5	6	9	24
3	2	10	14	8	21	55
4	3	8	18	26	120	175
5	2	0	1	11	407	421
TOTAL	8	21	38	51	558	676

BRYAN SCORE 0.25759

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	2	3	2	55	62
2	1	7	6	3	21	38
3	0	7	6	7	5	25
4	3	5	21	27	110	166
5	4	0	2	12	367	385
TOTAL	8	21	34	51	558	676

BRYAN SCORE 0.21603

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	1	11	12
2	0	5	4	2	1	12
3	0	6	9	11	7	33
4	4	9	21	26	115	175
5	4	1	4	11	424	444
TOTAL	8	21	38	51	558	676

BRYAN SCORE 0.26551

VERIFICATION OF 3 HOUR VISIBILITY FORECASTS
ATLANTIC CITY, N.J. AIRPORT
THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	7	2	2	3	10	24
2	0	8	6	3	9	26
3	1	3	4	3	6	17
4	2	1	0	2	8	13
5	3	3	10	24	579	619
TOTAL	13	17	22	35	612	699

BRYAN SCORE 0.24188

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	0	1	4	0	6
2	5	6	4	0	7	22
3	4	3	8	7	19	41
4	2	4	3	7	18	34
5	1	4	5	17	568	596
TOTAL	13	17	22	35	612	699

BRYAN SCORE 0.25398

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	7	3	2	3	10	25
2	0	6	3	3	6	18
3	1	4	3	3	8	19
4	2	1	4	2	9	18
5	3	3	10	24	579	619
TOTAL	13	17	22	35	612	699

BRYAN SCORE 0.20784

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	7	2	3	4	60	76
2	0	2	0	2	13	17
3	2	8	9	8	52	79
4	2	3	4	15	127	151
5	2	2	6	6	300	376
TOTAL	13	17	22	35	612	699

BRYAN SCORE 0.28790

LOW CONINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	6	6	7	6	16	41
2	0	0	0	0	0	0
3	3	8	5	5	12	33
4	4	2	9	21	217	253
5	0	1	1	3	367	372
TOTAL	13	17	22	35	612	699

BRYAN SCORE 0.28497

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	8	5	4	6	24	49
2	0	0	0	0	0	0
3	2	6	11	4	24	51
4	0	4	3	7	44	58
5	3	2	4	12	520	541
TOTAL	13	17	22	35	612	699

BRYAN SCORE 0.28049

VERIFICATION OF 5 HOUR VISIBILITY FORECAST
ATLANTIC CITY, N.J. AIRPORT
THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	1	2	19	22
2	1	3	7	2	13	26
3	1	0	3	2	10	16
4	0	0	1	2	10	13
5	4	4	7	14	357	546
TOTAL	6	7	19	22	609	663

BRYAN SCORE 0.09424

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	1	1	2
2	3	3	2	3	2	13
3	1	2	7	5	13	30
4	1	0	4	5	12	22
5	1	7	4	9	561	597
TOTAL	6	7	19	22	609	663

BRYAN SCORE 0.22087

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	3	3	4	20	30
2	0	0	0	0	0	0
3	2	0	7	3	18	30
4	0	0	2	1	14	17
5	4	4	7	14	557	586
TOTAL	6	7	19	22	609	663

BRYAN SCORE 0.09440

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	4	5	30	39
2	1	0	2	1	14	18
3	0	1	7	5	60	73
4	4	3	5	5	95	112
5	1	3	1	5	410	420
TOTAL	6	7	19	22	609	663

BRYAN SCORE 0.07725

LARGE CONFIDENCE PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	1	5	4	30	41
2	0	0	0	0	0	0
3	1	2	5	2	6	16
4	4	2	8	15	202	231
5	0	2	1	6	771	780
TOTAL	6	7	19	22	609	663

BRYAN SCORE 0.10617

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	1	0	3	35	40
2	0	0	0	0	1	1
3	0	3	7	5	47	62
4	1	2	3	9	61	76
5	0	1	1	5	465	476
TOTAL	6	7	19	22	609	663

BRYAN SCORE 0.10000

VERIFICATION OF 7 MD VISIBILITY FORECASTS
ATLANTIC CITY, N.J. AIRPORT
THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	1	0	20	21
2	1	3	5	1	15	25
3	2	1	1	0	12	16
4	0	0	0	0	14	14
5	2	3	12	13	546	581
TOTAL	10	7	19	14	607	657

BRYAN SCORE

0.03890

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	1	1
2	2	2	1	0	7	12
3	1	2	9	2	13	27
4	1	3	1	2	15	22
5	6	0	4	10	571	591
TOTAL	10	7	19	14	607	657

BRYAN SCORE

0.16645

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	1	1	0	8	10
2	0	0	0	0	0	0
3	3	2	6	1	26	38
4	0	1	0	0	27	28
5	7	3	12	13	546	581
TOTAL	10	7	19	14	607	657

BRYAN SCORE

0.06392

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	2	1	7	1	60	71
2	0	0	0	0	7	7
3	3	3	2	5	55	68
4	3	3	6	6	123	141
5	2	0	4	2	362	370
TOTAL	10	7	19	14	607	657

BRYAN SCORE

0.03250

LONG CONTINUITY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	1		5	1	31	40
2	0		0	0	0	0
3	0	3	11	6	204	220
4	1		1	1	43	47
5	2			0	329	340
TOTAL	10	7	19	14	607	657

BRYAN SCORE

0.05105

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	2	1	1	2	45	51
2	0	0	0	0	0	0
3	1	1	1	4	48	55
4	4	2	3	5	70	84
5	3	1	4	3	404	415
TOTAL	10	7	19	14	607	657

BRYAN SCORE

0.06711

VERIFICATION OF 2 HOUR CEILING FORECASTS
WESTOVER AFB, CHICOPPE, MASS.
THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	8	3	0	2	2	15
2	5	9	5	6	0	14
3	0	7	27	7	3	44
4	0	3	6	44	35	88
5	4	3	5	18	455	485
TOTAL	17	24	43	71	495	650

BRYAN SCORE 0.46412

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	3	2	0	1	1	7
2	11	10	4	0	3	30
3	0	8	24	9	3	44
4	0	3	7	44	22	76
5	3	1	4	17	466	493
TOTAL	17	24	43	71	495	650

BRYAN SCORE 0.46152

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	3	3	0	2	2	16
2	5	11	7	5	0	28
3	0	5	26	4	3	38
4	0	5	6	50	25	86
5	3	0	4	15	465	487
TOTAL	17	24	43	71	495	650

BRYAN SCORE 0.51902

GROUPING

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	3	3	0	2	2	16
2	1	7	5	0	0	13
3	4	13	10	7	3	57
4	0	1	6	50	48	105
5	3	0	2	12	442	459
TOTAL	17	24	43	71	495	650

BRYAN SCORE 0.49622

LONG CONTINGENCY PROGNOSIS

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	13	11	5	2	2	33
3	0	7	27	7	3	44
4	0	6	10	53	100	167
5	4	2	1	5	390	402
TOTAL	17	24	43	71	495	650

BRYAN SCORE 0.41770

MULTIPLE DISCRIMINANT ANALYSIS

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	10	3	0	2	2	17
2	4	15	7	0	0	26
3	0	4	26	6	1	37
4	0	2	9	52	66	129
5	3	0	1	11	424	441
TOTAL	17	24	43	71	495	650

BRYAN SCORE 0.51400

VERIFICATION OF 3 HOUR CEILING FORECASTS
WESTOVER AFB, CHICOPEE, MASS.
THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	9	3	0	2	2	16
2	4	11	8	1	0	24
3	0	8	27	5	4	44
4	0	4	6	49	24	83
5	3	0	5	16	470	494
TOTAL	16	26	46	73	500	661
BRYAN SCORE						0.51023

FORE- CAST	CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	8	3	1	2	2	16
2	3	9	1	0	0	13
3	1	7	29	10	4	51
4	0	4	9	42	35	90
5	4	3	6	19	459	491
TOTAL	16	26	46	73	500	661
BRYAN SCORE						0.49325

FORE- CAST	GROUPING OBSERVED					TOTAL
	1	2	3	4	5	
1	8	5	3	2	2	20
2	2	6	1	0	0	9
3	2	5	15	7	4	37
4	1	9	20	49	63	142
5	3	1	3	15	431	453
TOTAL	16	26	46	73	500	661
BRYAN SCORE						0.41391

FORE- CAST	LUND CONTINGENCY PROGNOSIS OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	13	14	8	3	2	40
3	0	8	27	5	4	44
4	0	4	10	57	83	154
5	3	0	1	8	411	423
TOTAL	16	26	46	73	500	661
BRYAN SCORE						0.46238

FORE- CAST	MULTIPLE DISCRIMINANT ANALYSIS OBSERVED					TOTAL
	1	2	3	4	5	
1	5	4	0	2	0	11
2	2	7	3	0	0	12
3	1	6	26	10	2	45
4	1	8	13	47	68	140
5	4	1	4	14	430	453
TOTAL	16	26	46	73	500	661
BRYAN SCORE						0.42293

VERIFICATION OF 4 HOUR CEILING FORECASTS
WESTOVER AFB, RHODE ISLAND, MASS.
THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	3	2	2	2	7	16
2	1	9	7	6	2	25
3	1	5	24	8	10	48
4	1	4	9	36	29	79
5	1	1	9	27	449	487
TOTAL	7	21	51	79	497	655

BRYAN SCORE 0.38566

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	1	0	1	2	4
2	3	6	4	4	3	20
3	2	10	21	12	3	48
4	0	3	15	19	36	73
5	1	1	11	24	453	490
TOTAL	7	21	51	79	497	655

BRYAN SCORE 0.37436

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	3	2	2	2	7	16
2	0	0	0	0	0	0
3	1	9	20	8	10	48
4	2	9	20	42	31	104
5	1	1	9	27	449	487
TOTAL	7	21	51	79	497	655

BRYAN SCORE 0.36301

GROUPING

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	3	2	2	1	7	15
2	0	3	4	1	0	8
3	2	8	19	8	11	48
4	1	8	20	54	90	173
5	1	0	6	15	389	411
TOTAL	7	21	51	79	497	655

BRYAN SCORE 0.36227

LONG CONTINGENCY PROGNOSIS

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	4	11	9	8	9	41
3	1	5	24	8	10	48
4	1	5	12	40	87	145
5	1	0	6	23	391	421
TOTAL	7	21	51	79	497	655

BRYAN SCORE 0.33634

MULTIPLE DISCRIMINANT ANALYSIS

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	4	2	3	2	4	15
2	1	2	2	1	1	7
3	1	11	28	9	4	53
4	0	5	13	51	64	73
5	1	1	5	16	424	447
TOTAL	7	21	51	79	497	655

BRYAN SCORE 0.42484

VERIFICATION OF 6 HOUR CEILING FORECASTS
WESTOVER AFB, CHICPEE, MASS.
THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	2	4	9	16
2	2	2	7	4	6	25
3	2	5	14	15	6	47
4	1	7	16	31	32	87
5	0	3	5	46	440	494
TOTAL	5	18	49	104	493	669

BRYAN SCORE

0.28264

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	0	1	0	1	3
2	2	6	10	1	1	20
3	0	5	20	11	3	39
4	1	1	13	51	39	107
5	1	4	5	41	449	500
TOTAL	5	18	49	104	493	669

BRYAN SCORE

0.39973

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	1	0	1
2	0	0	0	0	0	0
3	2	3	9	4	2	19
4	3	12	36	53	51	155
5	0	3	5	46	440	494
TOTAL	5	18	49	104	493	669

BRYAN SCORE

0.32537

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	1	0	2	3
2	0	1	0	3	6	15
3	0	3	14	6	4	27
4	2	12	26	63	112	215
5	1	2	5	32	369	409
TOTAL	5	18	49	104	493	669

BRYAN SCORE

0.32096

LUND CONFIDENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	2	4	0	6
2	2	1	4	3	4	14
3	2	7	25	17	9	60
4	1	9	16	52	120	205
5	0	1	4	75	360	370
TOTAL	5	18	49	104	493	669

BRYAN SCORE

0.14307

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	1	2	1	3	7
2	2	1	2	3	1	9
3	2	3	20	6	2	33
4	1	10	23	69	88	191
5	0	3	2	25	399	429
TOTAL	5	18	49	104	493	669

BRYAN SCORE

0.41177

VERIFICATION OF 2 HOUR VISIBILITY FORECASTS
WESTOVER AFB, CHICPEE, MASS.
THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	12	2	2	2	0	19
2	2	5	7	1	0	15
3	4	4	20	5	4	41
4	1	1	14	15	14	45
5	1	2	11	27	522	563
TOTAL	24	14	54	50	540	682

BRYAN SCORE 0.40414

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	4	2	1	0	0	7
2	15	3	1	0	0	22
3	10	9	32	12	8	71
4	0	0	7	24	24	57
5	0	0	5	14	506	525
TOTAL	24	14	54	50	540	682

BRYAN SCORE 0.48910

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	5	1	1	1	0	7
2	8	4	6	1	0	19
3	9	6	21	6	4	46
4	1	1	14	15	14	45
5	1	2	11	27	522	563
TOTAL	24	14	54	50	540	682

BRYAN SCORE 0.35706

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	14	4	4	2	0	26
2	1	1	2	0	0	4
3	5	7	26	11	9	58
4	2	2	20	25	38	90
5	0	0	2	9	493	504
TOTAL	24	14	54	50	540	682

BRYAN SCORE 0.53860

LONG CONTINGENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	24	14	53	45	141	280
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	0	0	1	2	349	402
TOTAL	24	14	54	50	540	682

BRYAN SCORE 0.06134

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	17	4	7	3	0	31
2	2	4	3	0	0	9
3	5	5	31	4	2	47
4	0	1	11	37	80	129
5	0	0	2	6	458	466
TOTAL	24	14	54	50	540	682

BRYAN SCORE 0.11111

VERIFICATION OF 3 HOUR VISIBILITY FORECASTS
 WESTVIEW AFB, CHICAGO, MASS.
 THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	16	4	2	2	0	24
2	5	4	1	0	0	12
3	4	5	30	1	3	43
4	0	0	10	14	13	47
5	0	1	6	17	525	551
TOTAL	25	14	51	48	541	679

BRYAN SCORE 0.57644

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	0	3	2	9	15
2	0	0	1	0	8	9
3	0	1	0	1	15	17
4	2	0	0	1	13	16
5	22	13	47	44	496	622
TOTAL	25	14	51	48	541	679

BRYAN SCORE -0.01668

LUND CONTINGENCY PROGNOSIS
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	15	7	7	3	0	32
3	7	2	9	0	3	21
4	2	5	12	16	118	143
5	1	0	3	4	420	431
TOTAL	25	14	51	48	541	679

BRYAN SCORE 0.35573

GRIPPING
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	11	2	3	7	0	23
2	2	4	3	4	1	14
3	7	5	22	5	8	47
4	4	3	16	28	85	136
5	1	0	3	9	447	460
TOTAL	25	14	51	48	541	679

BRYAN SCORE 0.46212

MULTIPLE DISCRIMINANT ANALYSIS
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	8	3	1	3	1	16
2	2	3	2	0	0	7
3	13	7	20	5	5	50
4	2	2	22	27	88	143
5	0	0	4	11	447	462
TOTAL	25	14	51	48	541	679

BRYAN SCORE 0.45445

VERIFICATION OF 4 HOUR VISIBILITY FORECASTS
WESTOVER AFB, CHICOPEE, MASS.
THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	5	2	10	2	4	23
2	1	2	5	0	4	12
3	2	6	22	7	9	46
4	2	2	12	12	18	46
5	2	1	12	22	504	545
TOTAL	12	13	61	43	543	672

BRYAN SCORE 0.32436

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	3	1	1	0	0	5
2	1	1	2	1	4	9
3	4	7	23	7	11	52
4	3	3	23	15	26	70
5	1	1	12	20	502	536
TOTAL	12	13	61	43	543	672

BRYAN SCORE 0.33053

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	5	1	2	0	1	9
2	0	0	0	0	0	0
3	3	6	16	4	6	35
4	2	5	31	17	28	83
5	2	1	12	22	508	545
TOTAL	12	13	61	43	543	672

BRYAN SCORE 0.30370

GROUPING

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	4	3	8	1	5	21
2	2	1	7	0	2	12
3	4	5	23	11	19	62
4	1	3	17	25	139	186
5	1	1	6	5	378	391
TOTAL	12	13	61	43	543	672

BRYAN SCORE 0.36291

LUND CONTINGENCY PROGNOSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	6	4	15	2	8	35
3	2	6	27	7	9	46
4	3	3	21	32	135	194
5	1	0	3	2	391	397
TOTAL	12	13	61	43	543	672

BRYAN SCORE 0.38621

MULTIPLE DISCRIMINANT ANALYSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	4	2	6	2	3	17
2	0	1	0	0	0	1
3	7	8	36	12	27	90
4	1	2	14	20	82	119
5	0	0	5	9	431	445
TOTAL	12	13	61	43	543	672

BRYAN SCORE 0.43028

VERIFICATION OF 6 HOUR VISIBILITY FORECASTS
WESTOVER AFB, CHICOPPEE, MASS.
THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	2	2	2	3	14	23
2	1	0	3	2	6	12
3	3	3	14	9	13	42
4	2	4	7	12	17	42
5	1	2	14	31	472	520
TOTAL	9	11	40	57	522	639

BRYAN SCORE 0.22272

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	1	1	0	0	3
2	0	1	7	2	4	14
3	3	3	11	10	4	31
4	4	5	7	13	23	52
5	1	1	14	32	491	539
TOTAL	9	11	40	57	522	639

BRYAN SCORE 0.22164

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	2	2	2	2	2	10
2	0	0	0	0	0	0
3	5	2	14	9	8	38
4	1	5	10	15	40	71
5	1	2	14	31	472	520
TOTAL	9	11	40	57	522	639

BRYAN SCORE 0.24600

GROUPINGS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	2	1	2	0	5	10
2	0	0	1	1	6	8
3	4	4	17	10	38	73
4	3	5	17	41	165	231
5	0	1	3	5	302	311
TOTAL	9	11	40	57	522	639

BRYAN SCORE 0.37222

LOW CONTINGENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	2	0	2	3	4	11
3	4	7	22	16	45	94
4	1	2	16	52	185	256
5	1	0	2	4	244	256
TOTAL	9	11	40	57	522	639

BRYAN SCORE 0.23774

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	2	2	2	2	10	18
2	0	0	0	0	3	3
3	5	4	14	14	29	71
4	1	3	13	25	40	132
5	1	2	7	16	390	416
TOTAL	9	11	40	57	522	639

BRYAN SCORE 0.37222

VERIFICATION OF 2 HOUR CEILING FORECASTS
WASHINGTON NATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	2	0	0	0	3
2	0	2	2	1	0	5
3	1	0	22	11	3	37
4	0	0	0	17	13	30
5	1	0	1	14	560	576
TOTAL	3	4	31	43	576	657

BRYAN SCORE 0.45971

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	1	3	1	1	0	6
3	1	1	23	11	3	39
4	0	0	6	17	13	36
5	1	0	1	14	560	576
TOTAL	3	4	31	43	576	657

BRYAN SCORE 0.46968

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	2	0	0	0	3
2	0	1	2	1	3	7
3	0	1	15	7	9	32
4	1	0	14	29	91	135
5	1	0	0	6	473	480
TOTAL	3	4	31	43	576	657

BRYAN SCORE 0.44018

LUND CONTINGENCY PROGNOSIS

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	1	4	2	1	0	8
3	1	0	22	11	3	37
4	0	0	7	25	84	119
5	1	0	0	1	489	491
TOTAL	3	4	31	43	576	657

BRYAN SCORE 0.53293

MULTIPLE DISCRIMINANT ANALYSIS

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	1	2	0	0	0	3
2	0	1	2	2	3	8
3	0	1	17	8	8	34
4	1	0	12	30	41	84
5	1	0	0	3	524	528
TOTAL	3	4	31	43	576	657

BRYAN SCORE 0.1111

VERIFICATION OF 3 HOUR CEILING FORECASTS
WASHINGTON NATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	0	0	0	1	2
2	0	1	3	1	2	7
3	0	0	10	2	0	12
4	0	0	6	13	9	28
5	1	1	3	16	471	492
TOTAL	2	2	22	32	483	541

BRYAN SCORE

0.34063

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	3	3	0	2	8
3	0	1	12	9	3	25
4	0	0	4	13	16	33
5	2	1	3	10	462	478
TOTAL	2	2	22	32	483	541

BRYAN SCORE

0.33702

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	1	0	3	0	1	5
3	0	1	4	1	2	8
4	0	0	12	13	9	34
5	1	1	3	16	471	492
TOTAL	2	2	22	32	483	541

BRYAN SCORE

0.27044

GROUPING

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	1	0	0	0	1	2
2	0	1	2	1	1	5
3	0	0	6	0	14	20
4	0	0	12	24	77	128
5	1	1	2	7	375	386
TOTAL	2	2	22	32	483	541

BRYAN SCORE

0.34424

LUND CONTINGENCY PROGNOSIS

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	1	1	3	1	3	9
3	0	0	10	2	0	12
4	0	1	8	25	128	162
5	1	0	1	4	352	358
TOTAL	2	2	22	32	483	541

BRYAN SCORE

0.37501

MULTIPLE DISCRIMINANT ANALYSIS

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	1	0	1	1	7	10
3	0	1	12	5	7	25
4	0	1	8	19	34	62
5	1	0	1	7	435	444
TOTAL	2	2	22	32	483	541

BRYAN SCORE

0.30680

VERIFICATION OF 5 WITH CEILING FORECASTS
WASHINGTON NATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE HVAL SCORE

PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	2	2
2	0	1	1	2	1	5
3	0	0	5	6	2	13
4	0	1	6	15	10	32
5		1	4	14	474	495
TOTAL	0	5	14	32	489	544

HVAL SCORE 0.2220

OBJECTIVE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	0	3	2	0	5
3	0	1	4	7	3	15
4	0	1	6	11	21	39
5		1	1	12	465	481
TOTAL	0	5	14	32	489	544

HVAL SCORE 0.26096

CLIMATOLOGICAL EXPECTANCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	0	1	1	2	4
3	0	1	4	7	2	14
4	0	1	9	15	11	36
5	0	1	4	14	474	495
TOTAL	0	5	14	32	489	544

HVAL SCORE 0.20681

GROWING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	3	3
2		0	0	1	1	2
3		1	11	11	11	34
4	0	1	7	17	89	114
5		1	0	4	365	376
TOTAL		5	14	32	489	544

HVAL SCORE 0.30108

LONG CONTINGENCY ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0		0	0	0
2	0	1	1	2	1	5
3	0	0	5	6	2	13
4	0	2	9	19	75	105
5		2	1	5	409	417
TOTAL		5	14	32	489	544

HVAL SCORE 0.2477

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1		0	0	0	0	0
2			0	0	1	1
3		1	9	10	13	33
4		2	10	19	65	96
5		2	0	4	430	436
TOTAL		5	14	32	489	544

HVAL SCORE 0.2477

VERIFICATION OF 7 HOUR CEILING FORECASTS
WASHINGTON NATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE BRYAN SCORE

PERSISTENCE						
OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	3	3
2	0	1	2	1	7	11
3	0	3	4	12	6	25
4	0	2	6	10	17	35
5	1	2	9	22	573	607
TOTAL	1	8	21	45	606	681

BRYAN SCORE 0.16392

FORE-CAST	SUBJECTIVE					TOTAL
	OBSERVED					
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	2	3	1	2	8
3	0	3	6	10	7	26
4	0	2	7	15	19	43
5	1	1	5	19	578	604
TOTAL	1	8	21	45	606	681

BRYAN SCORE 0.23019

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	0	1	0	2	3
3	0	3	4	8	9	24
4	0	3	7	15	22	47
5	1	2	9	22	573	607
TOTAL	1	8	21	45	606	681

BRYAN SCORE 0.20371

GROUPING

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	1	1
2	0	0	0	0	1	1
3	0	3	10	11	19	43
4	0	5	10	30	163	208
5	1	0	1	4	422	428
TOTAL	1	8	21	45	606	681

BRYAN SCORE 0.31062

LUND CONTINGENCY PROGNOSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	0	0	0	4	4
3	0	4	9	14	3	30
4	0	4	10	30	161	205
5	1	0	2	1	638	642
TOTAL	1	8	21	45	606	681

BRYAN SCORE 0.31466

MULTIPLE DISCRIMINANT ANALYSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	4	6	11	22	43
4	0	4	13	27	76	120
5	1	0	2	7	508	518
TOTAL	1	8	21	45	606	681

BRYAN SCORE 0.30632

VERIFICATION OF 2 HOUR VISIBILITY FORECASTS
WASHINGTON NATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	3	0	0	1	1	5
2	1	1	1	2	0	5
3	0	1	5	0	4	10
4	2	1	4	6	10	23
5	0	0	7	30	607	644
TOTAL	6	3	17	39	622	687

BRYAN SCORE 0.35468

FORE-CAST	CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	3	1	1	1	1	7
2	0	0	0	0	0	0
3	0	1	3	1	0	5
4	3	1	6	7	14	31
5	0	0	7	30	607	644
TOTAL	6	3	17	39	622	687

BRYAN SCORE 0.30711

FORE-CAST	GROUPING OBSERVED					TOTAL
	1	2	3	4	5	
1	2	1	0	3	1	7
2	1	0	0	0	0	1
3	1	1	1	0	20	23
4	2	1	14	22	122	161
5	0	0	2	14	479	495
TOTAL	6	3	17	39	622	687

BRYAN SCORE 0.53513

FORE-CAST	LUND CONTINGENCY PROGNOSIS OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	1	0	0	0	1	4
3	1	3	12	15	28	59
4	2	0	1	2	5	10
5	0	0	4	22	588	614
TOTAL	6	3	17	39	622	687

BRYAN SCORE 0.32460

FORE-CAST	MULTIPLE DISCRIMINANT ANALYSIS OBSERVED					TOTAL
	1	2	3	4	5	
1	2	0	0	0	1	3
2	0	0	0	2	1	3
3	3	3	4	3	12	25
4	1	0	10	29	108	148
5	0	0	3	5	500	508
TOTAL	6	3	17	39	622	687

BRYAN SCORE 0.7277

VERIFICATION OF 3 HOUR VISIBILITY FORECASTS
WASHINGTON NATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	1	1	2	1	6
2	1	0	1	0	0	2
3	0	1	1	2	3	7
4	0	0	3	5	13	21
5	1	0	7	18	547	573
TOTAL	3	2	13	27	564	609

BRYAN SCORE

0.18642

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	0	2	0	2	4
3	2	1	2	4	4	13
4	1	1	2	6	10	20
5	0	0	7	17	548	572
TOTAL	3	2	13	27	564	609

BRYAN SCORE

0.21640

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	1	1	0	1	3
2	0	0	0	1	0	0
3	0	0	1	2	1	4
4	2	1	6	18	61	88
5	1	0	5	7	501	514
TOTAL	3	2	13	27	564	609

BRYAN SCORE

0.49522

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	1	1	1	4
2	0	0	0	1	1	2
3	2	2	3	1	12	22
4	0	0	6	4	64	79
5	1	0	3	12	486	502
TOTAL	3	2	13	27	564	609

BRYAN SCORE

0.70818

LUO CONTINGENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	2	2	3	3	4	14
2	0	0	0	0	0	0
3	0	0	0	1	2	3
4	1	0	3	6	27	37
5	0	0	1	17	501	519
TOTAL	3	2	13	27	564	609

BRYAN SCORE

0.18270

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	1	0	0	1
2	1	1	2	2	5	11
3	0	1	0	2	21	24
4	1	0	8	19	78	106
5	1	0	2	4	460	467
TOTAL	3	2	13	27	564	609

BRYAN SCORE

0.49767

VERIFICATION OF 5 HOUR VISIBILITY FORECASTS
WASHINGTON NATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	2	0	4	7
2	0	0	0	0	3	3
3	0	0	1	1	7	9
4	1	0	2	7	12	22
5	2	2	6	17	628	655
TOTAL	3	3	11	25	654	696

BRYAN SCORE 0.18509

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	1	0	0	0	4	5
3	0	1	1	3	11	16
4	0	0	2	3	9	14
5	2	2	8	19	630	661
TOTAL	3	3	11	25	654	696

BRYAN SCORE 0.08722

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	2	0	2	4
2	0	0	0	0	0	0
3	0	0	0	1	3	4
4	3	2	7	23	323	358
5	0	1	2	1	326	330
TOTAL	3	3	11	25	654	696

BRYAN SCORE 0.37558

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	2	3	5
2	0	1	1	0	5	7
3	0	0	3	3	16	22
4	1	0	6	10	94	111
5	2	2	1	10	536	551
TOTAL	3	3	11	25	654	696

BRYAN SCORE 0.27907

LOW CONTINGENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	1	1	0	1	3
2	0	0	0	0	0	0
3	0	0	4	5	29	34
4	2	1	4	12	127	146
5	1	1	2	6	497	509
TOTAL	3	3	11	25	654	696

BRYAN SCORE 0.30561

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	1	0	1	4	6
2	0	0	1	0	6	7
3	2	0	2	2	6	12
4	0	1	3	21	155	185
5	1	1	0	1	483	486
TOTAL	3	3	11	25	654	696

BRYAN SCORE 0.47217

VERIFICATION OF 7 HOUR VISIBILITY FORECASTS
WASHINGTON NATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	1	0	6	7
2	0	0	1	0	2	3
3	0	1	1	1	6	9
4	0	0	4	4	15	23
5	3	1	5	15	647	671
TOTAL	3	2	12	20	676	713

BRYAN SCORE 0.11049

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	1	0	0	0	3	4
3	0	0	2	4	16	22
4	0	0	1	1	8	10
5	2	2	9	15	649	677
TOTAL	3	2	12	20	676	713

BRYAN SCORE 0.06181

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	1	0	1	2
2	0	0	0	0	0	0
3	0	1	1	0	2	4
4	3	1	9	13	341	367
5	0	0	1	7	332	340
TOTAL	3	2	12	20	676	713

BRYAN SCORE 0.14255

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	1	0	3	4
2	0	0	2	0	5	7
3	0	0	2	2	8	12
4	3	1	6	17	313	340
5	0	1	1	1	347	350
TOTAL	3	2	12	20	676	713

BRYAN SCORE 0.27212

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	2	2
4	0	0	0	0	16	16
5	3	2	12	20	658	695
TOTAL	3	2	12	20	676	713

BRYAN SCORE -0.00740

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	1	2	0	9	12
2	0	0	0	0	4	4
3	0	0	0	1	3	4
4	1	0	10	15	150	176
5	2	1	0	4	510	517
TOTAL	3	2	12	20	676	713

BRYAN SCORE 0.27425

VERIFICATION OF 2 HOUR CEILING FORECASTS
 IDLEWILD INTERNATIONAL AIRPORT
 THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	9	6	2	1	4	24
2	7	14	7	3	5	60
3	0	3	32	10	9	59
4	0	7	14	70	34	125
5	1	7	13	28	1136	1185
TOTAL	17	68	68	112	1188	1453

BRYAN SCORE 0.57307

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	7	5	2	0	3	17
2	9	41	7	4	6	67
3	0	8	32	10	9	59
4	0	7	14	70	34	125
5	1	7	13	28	1136	1185
TOTAL	17	68	68	112	1188	1453

BRYAN SCORE 0.57662

GROUPING
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	3	3	0	1	1	8
2	11	43	11	3	12	80
3	0	6	30	11	27	74
4	3	14	23	85	239	364
5	0	2	4	12	909	927
TOTAL	17	68	68	112	1188	1453

BRYAN SCORE 0.54995

LONG CONTINGENCY PROGNOSIS

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	16	47	11	4	19	97
3	0	7	27	12	14	60
4	0	7	20	74	95	196
5	1	7	10	22	1060	1100
TOTAL	17	68	68	112	1188	1453

BRYAN SCORE 0.54745

MULTIPLE DISCRIMINANT ANALYSIS

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	2	3	1	0	0	6
2	13	41	9	3	9	75
3	1	9	27	9	12	58
4	1	11	27	88	112	239
5	0	2	4	12	1055	1075
TOTAL	17	68	68	112	1188	1453

BRYAN SCORE 0.54642

VERIFICATION OF 3 HOUR CEILING FORECASTS
DUKEFIELD INTERNATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	9	9	2	1	5	26
2	5	24	6	4	4	43
3	0	13	28	7	10	58
4	0	3	11	33	37	84
5	0	6	10	32	1024	1072
TOTAL	14	55	57	77	1080	1283

BRYAN SCORE 0.41536

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	2	0	1	0	1	4
2	4	30	9	2	9	58
3	2	14	24	15	8	63
4	0	5	16	39	35	95
5	2	6	7	21	1027	1063
TOTAL	14	55	57	77	1080	1283

BRYAN SCORE 0.42587

CLIMATOLOGICAL EXPECTANCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	5	3	2	0	2	12
2	9	30	6	5	7	57
3	0	13	28	7	10	58
4	0	3	11	33	37	84
5	0	6	10	32	1024	1072
TOTAL	14	55	57	77	1080	1283

BRYAN SCORE 0.42350

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	4	0	1	3	9
2	6	17	7	4	11	45
3	7	25	31	15	74	152
4	0	5	16	41	154	216
5	0	4	3	16	838	861
TOTAL	14	55	57	77	1080	1283

BRYAN SCORE 0.33930

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	14	33	8	5	9	69
3	0	12	20	7	9	48
4	0	3	27	45	183	260
5	0	5	2	20	879	906
TOTAL	14	55	57	77	1080	1283

BRYAN SCORE 0.38506

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	4	6	2	0	2	14
2	10	24	7	5	7	53
3	0	16	25	9	10	60
4	0	5	22	53	119	199
5	0	4	1	10	942	957
TOTAL	14	55	57	77	1080	1283

BRYAN SCORE 0.44647

VERIFICATION OF 5 HOUR CEILING FORECASTS
IDLEWILD INTERNATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE HRYAN SCORE

PERSISTENCE						
OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	6	7	3	0	11	27
2	5	27	11	6	12	61
3	1	12	27	12	22	74
4	1	6	11	41	54	113
5	10	8	18	52	108	1176
TOTAL	23	60	70	111	1187	1451

HRYAN SCORE 0.37417

SUBJECTIVE						
OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	0	2	0	0	0	2
2	9	22	10	7	16	64
3	5	18	53	16	17	89
4	0	6	15	45	45	111
5	9	12	12	43	1109	1185
TOTAL	23	60	70	111	1187	1451

HRYAN SCORE 0.38298

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	2	3	0	0	1	6
2	9	25	8	4	17	63
3	1	18	31	12	20	82
4	1	6	13	43	61	124
5	10	8	18	52	108	1176
TOTAL	23	60	70	111	1187	1451

HRYAN SCORE 0.37524

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	5	5	2	0	7	19
2	2	15	6	6	15	44
3	4	16	29	8	39	96
4	7	20	30	75	278	410
5	5	4	3	22	848	882
TOTAL	23	60	70	111	1187	1451

HRYAN SCORE 0.39538

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	12	35	12	10	41	110
3	1	10	29	10	30	80
4	4	13	24	79	276	396
5	6	2	5	12	840	865
TOTAL	23	60	70	111	1187	1451

HRYAN SCORE 0.46216

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	2	4	2	0	1	9
2	8	22	10	5	17	62
3	0	14	24	9	21	68
4	7	18	29	83	210	347
5	6	2	5	14	938	965
TOTAL	23	60	70	111	1187	1451

HRYAN SCORE 0.45354

VERIFICATION OF 7 HOUR CEILING FORECASTS
 IDLEWILD INTERNATIONAL AIRPORT
 THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	6	3	2	1	15	27
2	8	20	4	9	20	61
3	1	15	16	16	24	74
4	3	7	17	29	57	114
5	6	16	21	69	1065	1177
TOTAL	24	61	60	126	1181	1452

BRYAN SCORE 0.25375

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	2	0	0	0	0	2
2	10	21	5	6	13	55
3	4	20	26	23	21	96
4	2	10	16	44	54	126
5	6	10	11	53	1093	1173
TOTAL	24	61	60	126	1181	1452

BRYAN SCORE 0.35970

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	11	14	4	2	26	57
3	1	9	14	10	19	53
4	6	22	21	45	71	165
5	6	16	21	69	1065	1177
TOTAL	24	61	60	126	1181	1452

BRYAN SCORE 0.26449

GROUPING
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	1	0	11	12
2	7	16	6	7	22	58
3	2	6	7	5	14	34
4	12	30	45	82	262	431
5	3	9	1	32	872	917
TOTAL	24	61	60	126	1181	1452

BRYAN SCORE 0.33615

LUND CONTINGENCY PROGNOSIS
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	13	21	5	5	37	81
3	3	14	17	24	28	86
4	5	17	33	62	216	333
5	3	9	5	35	700	952
TOTAL	24	61	60	126	1181	1452

BRYAN SCORE 0.32277

MULTIPLE DISCRIMINANT ANALYSIS
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	5	10	5	6	15	41
3	4	9	7	5	9	34
4	12	34	46	80	183	355
5	3	8	2	35	974	1022
TOTAL	24	61	60	126	1181	1452

BRYAN SCORE 0.34172

VERIFICATION OF 2 HOUR VISIBILITY FORECASTS
IDLEWILD INTERNATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE BRYAN SCORE

PERSISTENCE

OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	14	6	3	4	6	33
2	4	6	4	1	4	19
3	4	7	17	5	9	42
4	0	4	6	10	30	50
5	3	4	12	29	1173	1221
TOTAL	25	27	42	49	1222	1365

BRYAN SCORE 0.43347

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE

OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	14	6	3	4	6	33
2	4	5	1	0	2	12
3	4	8	20	6	11	49
4	0	4	6	10	30	50
5	3	4	12	29	1173	1221
TOTAL	25	27	42	49	1222	1365

BRYAN SCORE 0.45201

GROUPING

OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	8	1	0	2	2	13
2	6	6	7	4	13	36
3	2	11	16	13	101	143
4	7	7	12	23	249	298
5	2	2	7	7	857	875
TOTAL	25	27	42	49	1222	1365

BRYAN SCORE 0.41716

LUND CONTINGENCY PROGNOSIS

OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	11	9	3	4	8	37
3	10	14	20	15	37	96
4	0	0	0	0	0	0
5	4	4	17	30	1177	1232
TOTAL	25	27	42	49	1222	1365

BRYAN SCORE 0.26664

MULTIPLE DISCRIMINANT ANALYSIS

OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	18	7	3	5	8	41
2	0	3	2	1	1	7
3	2	5	14	3	14	38
4	4	11	22	38	332	407
5	1	1	1	2	867	872
TOTAL	25	27	42	49	1222	1365

BRYAN SCORE 0.60849

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VERIFICATION OF 5 HOUR VISIBILITY FORECASTS
 IDEWILDO INTERNATIONAL AIRPORT
 THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	10	4	5	2	10	31
2	2	4	3	2	9	20
3	1	3	2	4	20	30
4	2	2	5	4	32	49
5	12	9	14	35	1115	1195
TOTAL	27	22	29	47	1186	1311

BRYAN SCORE 0.17957

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	4	3	0	1	2	10
2	7	5	2	2	11	27
3	5	5	9	8	27	56
4	1	2	4	9	44	60
5	10	7	14	27	1102	1160
TOTAL	27	22	29	47	1186	1311

BRYAN SCORE 0.24756

CLIMATOLOGICAL FREQUENCY OF PERSISTENCE

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	10	5	2	1	9	27
2	3	3	1	0	5	10
3	1	2	5	3	11	22
4	4	10	17	32	566	649
5	11	2	4	11	575	603
TOTAL	27	22	29	47	1186	1311

BRYAN SCORE 0.33782

GROUPING

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	2	2	2	0	12	18
2	1	0	2	1	14	18
3	11	7	4	4	27	61
4	9	10	11	24	313	369
5	4	3	6	12	820	845
TOTAL	27	22	29	47	1186	1311

BRYAN SCORE 0.26971

LIHO CONTINGENCY PROGNOSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	10	7	4	3	16	44
3	4	5	7	4	110	134
4	4	8	7	11	231	263
5	9	2	7	23	429	470
TOTAL	27	22	29	47	1186	1311

BRYAN SCORE 0.17966

MULTIPLE DISCRIMINANT ANALYSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	7	3	1	1	4	16
2	1	3	2	1	5	12
3	7	4	6	5	32	54
4	9	10	17	30	359	425
5	4	0	3	10	786	803
TOTAL	27	22	29	47	1186	1311

BRYAN SCORE 0.17971

VERIFICATION OF 7 HOUR VISIBILITY FORECASTS
IDLEWILD INTERNATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	10	0	4	2	17	31
2	3	1	5	1	10	20
3	2	3	3	1	22	31
4	1	2	4	2	36	44
5	15	12	26	44	1114	1211
TOTAL	31	18	42	50	1197	1338

BRYAN SCORE 0.12685

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	2	1	1	0	0	4
2	7	4	5	1	11	28
3	10	8	13	10	28	69
4	2	2	8	7	45	64
5	10	3	15	32	1113	1173
TOTAL	31	18	42	50	1197	1338

BRYAN SCORE 0.23292

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	6	0	3	1	8	18
2	2	2	5	1	11	21
3	4	2	2	1	19	28
4	14	12	28	42	867	963
5	5	2	4	5	292	308
TOTAL	31	18	42	50	1197	1338

BRYAN SCORE 0.27782

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	2	4	3	5	35	49
2	2	1	2	6	14	25
3	1	4	4	4	104	119
4	16	2	13	6	183	200
5	10	5	20	29	881	94
TOTAL	31	18	42	50	1197	1338

BRYAN SCORE 0.04895

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	1	0	0	0	0	1
3	5	2	4	7	30	46
4	20	14	29	35	408	506
5	5	2	9	8	759	783
TOTAL	31	18	42	50	1197	1338

BRYAN SCORE 0.27549

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	10	1	7	2	7	27
2	0	0	2	5	27	32
3	1	2	4	1	7	15
4	15	13	24	32	331	457
5	5	6	5	12	783	805
TOTAL	31	18	42	50	1197	1338

BRYAN SCORE 0.44676

VERIFICATION OF 2 HOUR CEILING FORECASTS
OFFUTT AFB, OMAHA, NEBRASKA
THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	1	1	0	0	3
2	0	21	2	4	1	28
3	0	2	9	1	2	14
4	0	3	2	60	26	91
5	0	4	2	20	532	558
TOTAL	1	31	16	85	561	694

BRYAN SCORE 0.59696

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	1	8	9
2	0	21	3	2	4	30
3	0	5	9	5	3	22
4	0	2	2	54	29	87
5	1	3	2	23	517	546
TOTAL	1	31	16	85	561	694

BRYAN SCORE 0.53966

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	1	0	1
2	1	22	3	3	1	30
3	0	2	9	1	2	14
4	0	3	2	60	26	91
5	0	4	2	20	532	558
TOTAL	1	31	16	85	561	694

BRYAN SCORE 0.59717

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	1	0	0	0	2
2	0	21	3	5	1	30
3	0	1	9	0	1	11
4	0	5	2	65	65	137
5	0	3	2	15	494	514
TOTAL	1	31	16	85	561	694

BRYAN SCORE 0.59553

LONG-TERM FORECAST PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	1	22	3	4	1	31
3	0	2	9	1	2	14
4	0	5	4	73	149	231
5	0	2	0	7	409	418
TOTAL	1	31	16	85	561	694

BRYAN SCORE 0.57176

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	1	1	0	0	3
2	0	22	3	4	2	31
3	0	1	6	1	1	9
4	0	6	6	68	59	139
5	0	1	0	12	499	512
TOTAL	1	31	16	85	561	694

BRYAN SCORE 0.61255

VERIFICATION OF 6 HOUR CEILING FORECASTS
OFFUTT AFB, OMAHA, NEBRASKA
THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	0	0	1	2	4
2	2	11	6	3	5	27
3	0	3	6	4	2	15
4	0	4	3	33	35	75
5	0	6	8	23	494	531
TOTAL	3	24	23	64	538	652

BRYAN SCORE

0.36020

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	2	1	1	4	9
2	0	4	7	3	5	24
3	1	8	6	4	5	28
4	1	1	4	36	29	71
5	0	4	5	16	495	520
TOTAL	3	24	23	64	538	652

BRYAN SCORE

0.37798

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	1	0	0	0	1
2	3	12	7	5	8	35
3	0	0	0	0	0	0
4	0	5	8	36	36	85
5	0	6	8	23	494	531
TOTAL	3	24	23	64	538	652

BRYAN SCORE

0.34516

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	2	1	1	2	2	8
2	0	4	2	2	0	8
3	0	0	0	1	0	1
4	1	17	15	45	419	497
5	0	2	5	14	117	138
TOTAL	3	24	23	64	538	652

BRYAN SCORE

0.00312

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	3	11	6	4	7	31
3	0	1	3	1	0	5
4	0	10	11	49	124	194
5	0	2	3	10	407	422
TOTAL	3	24	23	64	538	652

BRYAN SCORE

0.36930

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	0	0	0	2	3
2	2	10	5	3	3	23
3	0	1	4	1	1	7
4	0	11	12	50	81	154
5	0	2	2	10	451	465
TOTAL	3	24	23	64	538	652

BRYAN SCORE

0.42586

VERIFICATION OF 6 HOUR CEILING FORECASTS
OFFUTT AFB, OMAHA, NEBRASKA
THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	0	0	1	1	3
2	1	7	6	3	9	26
3	0	2	4	4	4	14
4	0	4	3	35	38	80
5	0	3	6	33	498	541
TOTAL	2	16	19	76	551	664

BRYAN SCORE 0.32336

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	2	0	1	6	9
2	1	5	5	5	5	21
3	0	2	6	9	5	22
4	1	3	3	36	38	81
5	0	4	5	25	497	531
TOTAL	2	16	19	76	551	664

BRYAN SCORE 0.32811

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	1	0	0	0	1
2	2	3	6	4	10	25
3	0	0	0	0	0	0
4	0	9	7	39	42	97
5	0	3	6	33	499	541
TOTAL	2	16	19	76	551	664

BRYAN SCORE 0.29762

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	2	1	0	2	0	5
2	0	0	0	0	0	0
3	0	3	5	2	5	15
4	0	9	8	39	47	103
5	0	3	6	33	498	541
TOTAL	2	16	19	76	551	664

BRYAN SCORE 0.31957

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	2	2	3	4	8	19
3	0	0	0	0	0	0
4	0	12	12	57	137	219
5	0	2	4	15	406	427
TOTAL	2	16	19	76	551	664

BRYAN SCORE 0.32902

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	1	1	2
2	2	7	9	7	6	31
3	0	0	0	3	2	5
4	0	7	9	53	100	169
5	0	2	1	17	442	462
TOTAL	2	16	19	76	551	664

BRYAN SCORE 0.37238

VERIFICATION OF 2 HOUR VISIBILITY FORECASTS
OFFUTT AFB, OMAHA, NEBRASKA
THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	3	0	0	0	0	3
2	0	4	0	1	3	8
3	0	3	6	4	4	17
4	0	0	8	6	8	22
5	2	1	7	10	624	644
TOTAL	5	8	21	21	639	694

BRYAN SCORE 0.35582

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	3	0	0	0	1	4
2	0	0	0	1	0	1
3	0	5	5	5	6	21
4	0	3	7	8	14	32
5	2	0	9	7	618	636
TOTAL	5	8	21	21	639	694

BRYAN SCORE 0.29999

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	3	0	0	0	0	3
2	0	0	0	0	0	0
3	0	7	6	5	7	25
4	0	0	8	6	8	22
5	2	1	7	10	624	644
TOTAL	5	8	21	21	639	694

BRYAN SCORE 0.28366

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	1	0	0	0	0	1
2	1	1	0	0	0	2
3	0	3	7	3	36	49
4	2	4	10	11	135	162
5	1	0	4	7	468	480
TOTAL	5	8	21	21	639	694

BRYAN SCORE 0.29433

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	2	0	0	0	2	4
3	0	7	5	5	5	22
4	2	1	15	14	96	128
5	1	0	1	2	536	540
TOTAL	5	8	21	21	639	694

BRYAN SCORE 0.31877

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	3	0	0	0	1	4
2	0	0	0	0	0	0
3	0	7	8	7	13	35
4	1	1	11	10	35	58
5	1	0	2	4	590	597
TOTAL	5	8	21	21	639	694

BRYAN SCORE 0.38221

VERIFICATION OF 4 HOUR VISIBILITY FORECASTS
OFFUTT AFB, OMAHA, NEBRASKA
THE VERIFICATION CRITERION IS THE HRYAN SCORE

PERSISTENCE							SUBJECTIVE						
OBSERVED							OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL	FORE-CAST	1	2	3	4	5	TOTAL
1	3	0	0	0	0	3	1	2	0	0	0	0	2
2	1	1	0	0	4	6	2	1	0	2	0	0	3
3	0	1	7	6	4	18	3	1	1	3	5	11	21
4	0	1	4	5	12	22	4	0	4	4	6	16	30
5	0	2	7	19	616	644	5	0	0	9	14	609	637
TOTAL	4	5	18	30	636	693	TOTAL	4	5	18	30	636	693
BRYAN SCORE						0.29501	BRYAN SCORE						0.20000

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE

OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	3	0	0	0	0	3
2	0	0	0	0	0	0
3	1	2	7	6	8	24
4	0	1	4	5	12	22
5	0	2	7	19	616	644
TOTAL	4	5	18	30	636	693
HRYAN SCORE						
						0.27695

GROUPING

OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	1	0	0	0	0	1
2	0	0	0	0	2	2
3	2	2	5	6	36	51
4	1	2	7	18	200	228
5	0	1	6	6	398	411
TOTAL	4	5	18	30	636	693
HRYAN SCORE						
						0.33181

LOW CONTINGENCY PROGNOSIS

OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	2	0	0	0	3	5
3	2	2	7	6	5	22
4	0	3	7	15	48	73
5	0	0	4	7	580	593
TOTAL	4	5	18	30	636	693
HRYAN SCORE						
0.39544						

MULTIPLE DISCRIMINANT ANALYSIS

OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	3	0	0	0	1	4
2	0	0	0	0	1	1
3	0	0	4	8	13	25
4	1	5	13	15	101	135
5	0	0	1	7	220	228
TOTAL	4	5	18	30	636	693
HRYAN SCORE						
						0.34444

VERIFICATION OF 6 HOUR VISIBILITY FORECASTS
OFFUTT AFB, OMAHA, NEBRASKA
THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	3	0	0	0	0	3
2	0	0	1	0	6	7
3	0	2	3	5	3	13
4	0	0	2	3	15	20
5	0	0	8	15	552	575
TOTAL	3	2	14	23	576	618

BRYAN SCORE 0.18405

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	1	2	0	0	2
3	3	0	0	5	5	13
4	0	1	1	4	12	18
5	1	1	11	14	559	585
TOTAL	3	2	14	23	576	618

BRYAN SCORE 0.08495

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	3	2	4	5	11	25
4	0	0	9	13	288	310
5	0	0	1	5	277	283
TOTAL	3	2	14	23	576	618

BRYAN SCORE 0.19065

GRUIPPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	1	0	0	0	0	1
2	0	0	0	0	3	3
3	2	1	6	8	28	45
4	0	1	5	8	66	80
5	0	0	3	7	479	489
TOTAL	3	2	14	23	576	618

BRYAN SCORE 0.27147

LOW CONTINGENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	3	2	4	5	9	23
4	0	0	3	10	58	71
5	0	0	7	8	509	524
TOTAL	3	2	14	23	576	618

BRYAN SCORE 0.26732

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	1	0	0	0	1	2
2	0	0	1	1	3	5
3	2	1	3	4	16	26
4	0	1	7	12	55	75
5	0	0	3	6	501	510
TOTAL	3	2	14	23	576	618

BRYAN SCORE 0.10694

VERIFICATION OF 2 HOUR CEILING FORECASTS
 RANDOLPH AFB, SAN ANTONIO, TEXAS
 THE VERIFICATION CRITERION IS THE BRYAN SCORE

PERSISTENCE OBSERVED							SUBJECTIVE OBSERVED						
FORE- CAST	1	2	3	4	5	TOTAL	FORE- CAST	1	2	3	4	5	TOTAL
1	4	2	4	1	0	11	1	1	1	2	1	1	6
2	0	4	7	2	1	14	2	2	6	6	2	0	16
3	0	6	74	27	16	123	3	1	6	75	24	16	126
4	0	0	14	52	14	84	4	0	1	19	48	27	95
5	0	2	14	19	425	460	5	0	0	11	22	416	449
TOTAL	4	14	113	101	460	692	TOTAL	4	14	113	101	460	692
BRYAN SCORE						0.60776	BRYAN SCORE						0.58456

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE OBSERVED							GROUPING OBSERVED						
FORE- CAST	1	2	3	4	5	TOTAL	FORE- CAST	1	2	3	4	5	TOTAL
1	4	2	4	1	0	11	1	2	3	3	0	0	8
2	0	1	1	0	0	2	2	0	1	3	1	0	5
3	0	9	80	29	17	135	3	2	6	79	25	65	179
4	0	0	14	52	18	84	4	0	2	26	63	57	148
5	0	2	14	19	425	460	5	0	0	2	12	338	352
TOTAL	4	14	113	101	460	692	TOTAL	4	14	113	101	460	692
BRYAN SCORE						0.62049	BRYAN SCORE						0.57693

LUND CONTINGENCY PROGNOSIS OBSERVED							MULTIPLE DISCRIMINANT ANALYSIS OBSERVED						
FORE- CAST	1	2	3	4	5	TOTAL	FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0	1	4	3	5	1	0	13
2	4	4	0	2	1	20	2	3	1	3	0	0	4
3	0	0	74	26	14	122	3	0	10	86	40	49	165
4	0	0	24	52	21	173	4	0	0	17	53	30	100
5	0	2	4	15	354	377	5	0	0	2	7	381	390
TOTAL	4	14	113	101	460	692	TOTAL	4	14	113	101	460	692
BRYAN SCORE						0.65187	BRYAN SCORE						0.62313

VERIFICATION OF 4 HOUR CEILING FORECASTS
 RANDOLPH AFB, SAN ANTONIO, TEXAS
 THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	4	4	2	1	11
2	0	2	4	0	2	13
3	0	3	39	29	49	120
4	0	1	11	40	26	78
5	0	0	18	35	405	458
TOTAL	0	10	81	106	483	680

BRYAN SCORE 0.36128

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	2	5	1	0	8
3	0	6	45	24	7	82
4	0	1	19	48	47	115
5	0	1	12	33	429	475
TOTAL	0	10	91	106	483	680

BRYAN SCORE 0.44730

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	4	4	2	1	11
2	0	0	2	0	0	2
3	0	4	39	16	7	56
4	0	2	18	53	70	143
5	0	0	18	35	405	458
TOTAL	0	10	81	106	483	680

BRYAN SCORE 0.40606

GROUPING
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	3	0	0	1	4
2	0	1	3	2	0	6
3	0	4	40	27	89	160
4	0	2	27	61	87	177
5	0	0	11	16	306	333
TOTAL	0	10	81	106	483	680

BRYAN SCORE 0.35903

LUND CONTINGENCY PROGNOSIS
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	5	6	2	1	14
3	0	3	43	27	56	129
4	0	2	12	51	62	134
5	0	0	13	26	364	403
TOTAL	0	10	81	106	483	680

BRYAN SCORE 0.39777

MULTIPLE DISCRIMINANT ANALYSIS
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	3	1	0	0	4
2	0	0	0	0	0	0
3	0	6	53	40	56	155
4	0	1	15	52	64	132
5	0	0	12	14	363	389
TOTAL	0	10	81	106	483	680

BRYAN SCORE 0.43142

VERIFICATION OF 6 HOUR CEILING FORECASTS
 RANDOLPH AFB, SAN ANTONIO, TEXAS
 THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE- CAST	PERSISTENCE					TOTAL
	OBSERVED					
	1	2	3	4	5	
1	0	1	3	5	2	11
2	0	1	6	3	3	13
3	2	6	29	23	59	119
4	0	2	18	28	30	78
5	1	3	24	40	389	457
TOTAL	3	13	80	99	483	678

BRYAN SCORE 0.24352

FORE- CAST	SUBJECTIVE					TOTAL
	OBSERVED					
	1	2	3	4	5	
1	0	0	0	1	0	1
2	1	2	6	1	0	10
3	1	7	48	21	26	103
4	0	1	19	38	38	96
5	1	3	7	38	419	468
TOTAL	3	13	80	99	483	678

BRYAN SCORE 0.40759

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	1	0	0	1
2	0	0	2	0	0	2
3	2	8	30	25	11	76
4	0	2	23	34	83	142
5	1	3	24	40	389	457
TOTAL	3	13	80	99	483	678

BRYAN SCORE 0.26791

GROUPING
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	2	0	2
2	0	1	3	3	3	10
3	2	4	32	26	87	151
4	1	5	25	41	99	171
5	0	3	20	27	294	344
TOTAL	3	13	80	99	483	678

BRYAN SCORE 0.21912

LUND CONTINGENCY PROGNOSIS
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	2	5	8	4	19
3	1	5	16	8	29	61
4	0	3	37	50	91	181
5	1	3	22	13	359	417
TOTAL	3	13	80	99	483	678

BRYAN SCORE 0.25918

MULTIPLE DISCRIMINANT ANALYSIS
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	1	2	2	0	5
2	0	0	0	0	0	0
3	2	10	50	42	55	159
4	0	0	18	39	95	152
5	1	2	10	16	333	362
TOTAL	3	13	80	99	483	678

BRYAN SCORE 0.33524

VERIFICATION OF 2 HOUR VISIBILITY FORECASTS
 RANDOLPH AFB, SAN ANTONIO, TEXAS
 THE VERIFICATION CRITERION IS THE BRYAN SCORE

PERSISTENCE							SUBJECTIVE						
OBSERVED							OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL	FORE-CAST	1	2	3	4	5	TOTAL
1	4	0	3	1	4	12	1	1	1	2	0	0	4
2	1	1	2	1	0	5	2	2	0	1	0	2	5
3	3	0	7	3	5	18	3	4	3	8	6	7	28
4	0	1	6	4	7	18	4	0	1	8	6	13	28
5	1	2	5	15	626	649	5	2	2	4	12	620	649
TOTAL	9	4	23	24	642	702	TOTAL	9	4	23	24	642	702
BRYAN SCORE						0.33109	BRYAN SCORE						0.31022

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE							GROUPING						
OBSERVED							OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL	FORE-CAST	1	2	3	4	5	TOTAL
1	4	0	3	1	4	12	1	3	0	3	3	18	27
2	0	0	1	0	0	1	2	1	0	1	0	0	2
3	4	1	7	4	5	21	3	3	1	7	5	31	49
4	0	1	8	7	167	183	4	1	3	9	11	89	113
5	1	2	4	12	466	485	5	1	0	1	1	504	511
TOTAL	9	4	23	24	642	702	TOTAL	9	4	23	24	642	702
BRYAN SCORE						0.29556	BRYAN SCORE						0.42319

LUND CONFIDENCY PROGNOSIS							MULTIPLE DISCRIMINANT ANALYSIS						
OBSERVED							OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL	FORE-CAST	1	2	3	4	5	TOTAL
1	5	1	5	2	4	17	1	2	0	2	2	2	8
2	0	0	0	0	0	0	2	1	0	0	0	0	1
3	3	0	7	4	36	50	3	3	1	13	6	19	42
4	1	3	10	15	127	156	4	3	3	8	13	80	107
5	0	0	1	3	475	479	5	0	0	0	3	541	544
TOTAL	9	4	23	24	642	702	TOTAL	9	4	23	24	642	702
BRYAN SCORE						0.49208	BRYAN SCORE						0.54662

VERIFICATION OF 4 HOUR VISIBILITY FORECASTS
 RANDOLPH AFB, SAN ANTONIO, TEXAS
 THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	0	2	1	8	12
2	0	0	2	0	3	5
3	0	0	4	3	8	15
4	0	0	4	2	12	18
5	0	0	7	8	617	632
TOTAL	1	0	19	14	648	682

BRYAN SCORE 0.14764

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	0	0	0	1	1
3	0	0	7	4	5	16
4	0	0	4	3	13	20
5	1	0	8	7	629	645
TOTAL	1	0	19	14	648	682

BRYAN SCORE 0.21720

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	1	0	2	1	6	10
2	0	0	0	0	0	0
3	0	0	9	4	23	36
4	0	0	4	4	157	165
5	0	0	4	5	462	471
TOTAL	1	0	19	14	648	682

BRYAN SCORE 0.22019

GROUPING

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	1	0	1	0	51	53
2	0	0	1	0	0	1
3	0	0	5	4	28	37
4	0	0	10	5	113	128
5	0	0	2	5	456	463
TOTAL	1	0	19	14	648	682

BRYAN SCORE 0.15468

LUND CONTINGENCY PROGNOSIS

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	3	0	5	8
2	0	0	0	0	0	0
3	1	0	5	4	23	33
4	0	0	10	4	195	214
5	0	0	1	1	425	427
TOTAL	1	0	19	14	648	682

BRYAN SCORE 0.20537

MULTIPLE DISCRIMINANT ANALYSIS

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	1	0	1	0	1	3
2	0	0	0	0	0	0
3	0	0	4	4	30	42
4	0	0	7	8	110	125
5	0	0	1	2	507	510
TOTAL	1	0	19	14	648	682

BRYAN SCORE 0.19256

VERIFICATION OF 6 HOUR VISIBILITY FORECASTS
 RANDOLPH AFB, SAN ANTONIO, TEXAS
 THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	2	3	7	12
2	0	0	2	0	3	5
3	0	1	0	1	12	15
4	0	0	0	2	16	18
5	1	1	10	10	610	632
TOTAL	1	2	14	16	649	682
BRYAN SCORE					0.03458	

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	1	1
2	0	0	0	0	1	1
3	1	0	4	5	7	17
4	0	1	1	1	13	16
5	0	1	9	10	627	647
TOTAL	1	2	14	16	649	682
BRYAN SCORE					0.10777	

FORE- CAST	CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	1	0	1
2	0	0	0	0	0	0
3	0	1	4	4	31	40
4	1	1	7	11	295	315
5	0	0	1	0	323	324
TOTAL	1	2	14	16	649	682
BRYAN SCORE					0.17352	

FORE- CAST	GROUPING OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	10	10
2	0	0	0	1	18	19
3	1	2	5	8	67	83
4	0	0	7	3	95	105
5	0	0	2	4	459	465
TOTAL	1	2	14	16	649	682
BRYAN SCORE					0.09268	

FORE- CAST	LUND CONTINGENCY PROGNOSIS OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	0	2	0	1	3
3	0	1	4	5	131	141
4	1	1	4	11	517	534
5	0	0	0	0	0	0
TOTAL	1	2	14	16	649	682
BRYAN SCORE					0.09566	

FORE- CAST	MULTIPLE DISCRIMINANT ANALYSIS OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	2	2	6	10
2	0	0	0	0	1	1
3	0	1	6	5	79	91
4	1	1	5	7	114	133
5	0	0	1	2	444	447
TOTAL	1	2	14	16	649	682
BRYAN SCORE					0.19255	

VERIFICATION OF 2 HOUR CEILING FORECASTS
MCQUIKE AFB, WRIGHTSTOWN, N.J.
THE VERIFICATION CRITERION IS THE BRYAN SCORE

PERSISTENCE							SUBJECTIVE						
OBSERVED							OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL	FORE-CAST	1	2	3	4	5	TOTAL
1	8	3	1	0	1	13	1	5	1	1	0	4	11
2	3	13	3	2	0	21	2	3	10	5	0	2	20
3	0	5	22	6	3	36	3	2	11	16	8	6	43
4	0	1	9	29	25	64	4	0	1	13	33	23	70
5	3	1	4	29	440	477	5	4	0	4	25	434	467
TOTAL	14	23	39	66	469	611	TOTAL	14	23	39	66	469	611
BRYAN SCORE						0.44029	BRYAN SCORE						0.40005

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE							GROUPING						
OBSERVED							OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL	FORE-CAST	1	2	3	4	5	TOTAL
1	8	3	1	0	1	13	1	7	3	1	0	1	12
2	2	8	2	1	0	13	2	4	12	3	1	0	20
3	1	10	23	7	3	44	3	0	6	25	9	2	42
4	0	1	9	29	25	64	4	1	2	9	41	68	121
5	3	1	4	29	440	477	5	2	0	1	15	398	416
TOTAL	14	23	39	66	469	611	TOTAL	14	23	39	66	469	611
BRYAN SCORE						0.42148	BRYAN SCORE						0.48085

LUND CONFINGENCY PROGNOSIS							MULTIPLE DISCRIMINANT ANALYSIS						
OBSERVED							OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL	FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0	1	10	3	1	1	4	19
2	12	17	4	4	4	41	2	2	12	3	1	0	18
3	0	4	25	11	8	48	3	1	6	25	5	2	39
4	0	1	8	22	20	51	4	0	1	8	45	46	100
5	1	1	2	29	437	471	5	1	1	2	14	417	435
TOTAL	14	23	39	66	469	611	TOTAL	14	23	39	66	469	611
BRYAN SCORE						0.39691	BRYAN SCORE						0.51514

VERIFICATION OF 4 HOUR CEILING FORECASTS
MCGUIRE AFB, WRIGHTSTOWN, N.J.
THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	4	2	0	3	9
2	0	8	7	2	1	18
3	1	2	16	4	4	27
4	0	5	6	16	29	56
5	0	1	7	27	374	409
TOTAL	1	20	38	49	411	519

BRYAN SCORE 0.30249

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	3	0	0	2	5
2	1	4	4	1	1	11
3	0	7	14	9	5	35
4	0	2	9	23	28	62
5	0	4	11	16	375	406
TOTAL	1	20	38	49	411	519

BRYAN SCORE 0.31666

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	1	0	0	1	2
2	0	4	2	0	0	6
3	1	9	23	6	7	46
4	0	5	6	16	29	56
5	0	1	7	27	374	409
TOTAL	1	20	38	49	411	519

BRYAN SCORE 0.32126

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	4	2	0	1	7
2	0	8	4	1	3	16
3	1	2	15	5	3	26
4	0	5	14	31	98	148
5	0	1	3	12	306	322
TOTAL	1	20	38	49	411	519

BRYAN SCORE 0.32559

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	7	8	1	6	22
3	1	7	19	7	3	37
4	0	5	8	37	148	198
5	0	1	3	6	354	362
TOTAL	1	20	38	49	411	519

BRYAN SCORE 0.32591

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	3	2	0	7	12
2	0	7	1	0	0	8
3	1	11	22	11	4	49
4	0	3	10	29	44	86
5	0	1	3	9	356	369
TOTAL	1	20	38	49	411	519

BRYAN SCORE 0.32280

VERIFICATION OF 6 HOUR CEILING FORECASTS
MCGUIRE AFB, WRIGHTSTOWN, N.J.
THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	1	0	6	7
2	2	2	6	6	2	18
3	1	6	8	7	6	28
4	1	5	9	16	23	56
5	1	2	5	32	368	408
TOTAL	5	15	31	63	405	519

BRYAN SCORE

0.22799

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	2	1	1	1	3	6
2	1	4	4	0	4	13
3	1	4	12	9	6	32
4	2	3	6	31	26	68
5	1	3	8	22	366	400
TOTAL	5	15	31	63	405	519

BRYAN SCORE

0.34673

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	1	0	1	2
2	2	1	1	2	0	6
3	1	7	15	11	13	47
4	1	5	9	18	23	56
5	1	2	5	32	368	408
TOTAL	5	15	31	63	405	519

BRYAN SCORE

0.26358

GROUPING

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	2	0	1	3
2	1	1	2	2	1	7
3	0	5	9	5	9	28
4	4	9	15	39	135	202
5	0	0	3	17	279	279
TOTAL	5	15	31	63	405	519

BRYAN SCORE

0.24674

LOW CONTINGENCY PROGNOSIS

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	2	4	9	56	71
2	0	0	1	0	2	3
3	2	8	13	15	8	46
4	2	3	10	27	84	126
5	1	2	3	12	255	273
TOTAL	5	15	31	63	405	519

BRYAN SCORE

0.18664

MULTIPLE DISCRIMINANT ANALYSIS

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	1	0	1
2	0	1	0	0	0	1
3	2	9	16	9	5	41
4	2	4	11	36	66	119
5	1	1	4	17	334	357
TOTAL	5	15	31	63	405	519

BRYAN SCORE

0.35599

VERIFICATION OF 2 HOUR VISIBILITY FORECASTS
MCUIRE AFB, WRIGHTSTOWN, N.J.
THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	11	5	0	0	0	16
2	2	6	6	1	0	15
3	1	4	37	10	6	54
4	0	0	22	21	11	54
5	0	1	15	22	431	469
TOTAL	14	16	80	54	448	612

BRYAN SCORE 0.52887

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	6	5	3	0	0	14
2	3	2	7	1	2	15
3	2	7	41	14	9	73
4	2	0	20	25	31	78
5	1	2	7	14	406	432
TOTAL	14	16	80	54	448	612

BRYAN SCORE 0.51300

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	11	5	0	0	0	16
2	0	4	2	1	0	7
3	3	6	41	10	6	66
4	0	0	22	21	11	54
5	0	1	15	22	431	469
TOTAL	14	16	80	54	448	612

BRYAN SCORE 0.54270

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	11	6	0	0	0	17
2	1	1	1	0	0	3
3	1	7	29	9	8	54
4	1	2	44	33	40	120
5	0	0	6	12	400	418
TOTAL	14	16	80	54	448	612

BRYAN SCORE 0.51170

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	11	0	2	0	2	24
3	3	6	41	15	18	83
4	0	0	30	28	118	176
5	0	1	7	11	310	329
TOTAL	14	16	80	54	448	612

BRYAN SCORE 0.46042

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	11	9	7	0	0	27
2	1	1	1	0	0	3
3	2	5	43	14	8	72
4	0	1	26	35	79	141
5	0	0	3	5	361	369
TOTAL	14	16	80	54	448	612

BRYAN SCORE 0.58842

VERIFICATION OF 4 HOUR VISIBILITY FORECASTS
MCGUIRE AFB, WRIGHTSTOWN, N.J.
THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE- CAST	PERSISTENCE OBSERVED					
	1	2	3	4	5	TOTAL
1	1	1	7	2	1	12
2	1	3	4	3	2	13
3	0	0	19	14	14	47
4	1	0	13	11	23	48
5	0	3	9	27	355	394
TOTAL	3	7	52	57	395	514

BRYAN SCORE 0.28270

FORE- CAST	SUBJECTIVE OBSERVED					
	1	2	3	4	5	TOTAL
1	1	1	1	1	1	5
2	0	0	4	1	3	8
3	1	2	18	8	9	38
4	1	1	20	18	34	74
5	0	3	9	24	348	389
TOTAL	3	7	52	57	395	514

BRYAN SCORE 0.29906

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	2	0	1	3
2	0	0	0	0	0	0
3	2	4	28	19	16	69
4	1	0	13	11	23	48
5	0	3	9	27	355	394
TOTAL	3	7	52	57	395	514

BRYAN SCORE 0.32339

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	2	3	2	4	12
2	1	0	0	0	2	3
3	1	2	19	14	20	56
4	0	0	23	22	77	122
5	0	3	7	19	292	321
TOTAL	3	7	52	57	395	514

BRYAN SCORE 0.28975

LONG CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	3	0	3
2	1	1	6	2	1	11
3	1	3	22	20	27	73
4	1	1	21	28	71	122
5	0	2	9	7	296	308
TOTAL	3	7	52	57	395	514

BRYAN SCORE 0.37715

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	2	1	5	2	1	11
2	0	0	0	0	0	0
3	1	3	29	25	20	78
4	0	2	15	26	93	136
5	0	1	3	4	281	289
TOTAL	3	7	52	57	395	514

BRYAN SCORE 0.41067

VERIFICATION OF 6 HOUR VISIBILITY FORECASTS
 MCGUIRE AFB, WRIGHTSTOWN, N.J.
 THE VERIFICATION CRITERION IS THE BRYAN SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	3	3	5	12
2	1	1	4	3	4	13
3	1	1	12	12	21	47
4	2	0	7	16	23	48
5	1	1	11	19	365	397
TOTAL	5	4	37	53	418	517

BRYAN SCORE 0.24223

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	2	1	1	5
2	1	1	4	0	1	9
3	2	1	6	4	9	22
4	0	1	13	17	36	67
5	2	0	12	31	369	414
TOTAL	5	4	37	53	418	517

BRYAN SCORE 0.19780

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	1	0	1	3
2	0	0	0	0	0	0
3	2	2	17	15	25	61
4	3	0	12	29	148	192
5	0	1	7	9	244	261
TOTAL	5	4	37	53	418	517

BRYAN SCORE 0.26196

GROUPING

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	0	2	1	4
2	0	0	1	1	1	3
3	1	2	14	16	43	76
4	3	0	17	21	71	112
5	1	1	5	13	302	322
TOTAL	5	4	37	53	418	517

BRYAN SCORE 0.23407

LUND CONTINGENCY PROGNOSIS

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	0	2	1	0	3
3	2	4	23	27	63	119
4	2	0	8	21	109	140
5	1	0	4	4	246	255
TOTAL	5	4	37	53	418	517

BRYAN SCORE 0.25447

MULTIPLE DISCRIMINANT ANALYSIS

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	1	0	0	2
2	0	0	0	0	0	0
3	1	2	22	31	46	102
4	1	1	14	19	114	149
5	1	0	0	3	258	262
TOTAL	5	4	37	53	418	517

BRYAN SCORE 0.24755

VERIFICATION OF 3 HOUR CEILING FORECASTS
ATLANTIC CITY, N.J. AIRPORT
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	2	6	3	0	3	14
2	0	16	9	2	4	31
3	1	3	11	8	3	26
4	1	2	5	12	11	31
5	1	5	4	16	553	579
TOTAL	5	32	32	38	574	681

NUMBER OF HITS 594 PERCENTAGE 0.8722

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	2	0	0	0	2
2	3	16	7	2	6	34
3	0	11	13	5	9	38
4	0	1	6	17	19	43
5	2	2	6	14	540	564
TOTAL	5	32	32	38	574	681

NUMBER OF HITS 586 PERCENTAGE 0.8605

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	2	3	0	0	1	6
2	0	12	6	0	2	20
3	1	7	14	10	5	37
4	0	1	2	5	7	15
5	2	9	10	23	559	603
TOTAL	5	32	32	38	574	681

NUMBER OF HITS 592 PERCENTAGE 0.8693

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	6	2	0	1	10
2	1	6	6	1	4	18
3	0	10	13	6	9	38
4	1	5	5	10	5	26
5	2	5	6	21	555	589
TOTAL	5	32	32	38	574	681

NUMBER OF HITS 585 PERCENTAGE 0.8590

LUND CONTINGENCY PROGNOSIS

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	2	22	12	2	7	45
2	0	0	0	0	0	0
3	0	2	6	5	7	17
4	2	3	9	22	85	121
5	1	5	3	9	480	499
TOTAL	5	32	32	38	574	681

NUMBER OF HITS 512 PERCENTAGE 0.7518

MULTIPLE DISCRIMINANT ANALYSIS

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	1	4	3	0	2	10
2	0	13	6	1	1	21
3	1	5	11	6	4	27
4	1	2	5	9	6	23
5	2	8	7	22	561	600
TOTAL	5	32	32	38	574	681

NUMBER OF HITS 595 PERCENTAGE 0.8737

VERIFICATION OF 5 HOUR CEILING FORECASTS
ATLANTIC CITY, N.J. AIRPORT
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	2	2	9	14
2	1	1	6	5	6	30
3	1	3	5	10	5	24
4	1	4	6	11	9	31
5	2	0	5	25	520	552
TOTAL	5	20	24	53	549	651

NUMBER OF HITS 548 PERCENTAGE 0.8413

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	0	0	0	1
2	3	11	8	4	3	29
3	1	8	8	13	10	40
4	0	0	6	18	18	42
5	1	0	2	18	518	539
TOTAL	5	20	24	53	549	651

NUMBER OF HITS 555 PERCENTAGE 0.8525

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	1	1	0	4	6
2	1	9	4	7	3	19
3	1	6	7	13	8	35
4	0	0	0	0	0	0
5	3	4	12	38	534	591
TOTAL	5	20	24	53	549	651

NUMBER OF HITS 550 PERCENTAGE 0.8449

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	1	2	2	8	13
2	0	9	7	5	3	24
3	1	5	2	5	5	18
4	0	2	2	5	1	10
5	4	3	11	36	532	586
TOTAL	5	20	24	53	549	651

NUMBER OF HITS 548 PERCENTAGE 0.8418

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	13	8	7	15	44
2	2	7	14	27	79	129
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	2	0	2	19	455	478
TOTAL	5	20	24	53	549	651

NUMBER OF HITS 463 PERCENTAGE 0.7112

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	1	2	2	8	13
2	0	8	1	2	1	12
3	1	7	7	5	1	21
4	1	2	2	6	1	12
5	3	2	12	38	538	593
TOTAL	5	20	24	53	549	651

NUMBER OF HITS 559 PERCENTAGE 0.8587

VERIFICATION OF 7 HOUR CEILING FORECASTS
ATLANTIC CITY, N.J. AIRPORT
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	2	2	10	15
2	1	11	7	3	11	33
3	0	4	5	8	8	25
4	2	7	9	10	11	39
5	5	3	15	28	518	569
TOTAL	8	21	38	51	558	676

NUMBER OF HITS 544 PERCENTAGE 0.8047

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	0	1	1	3
2	3	10	12	2	6	33
3	0	8	9	10	10	37
4	0	0	11	17	22	50
5	5	2	6	21	519	553
TOTAL	8	21	38	51	556	676

NUMBER OF HITS 555 PERCENTAGE 0.8210

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	1	2	0	4	7
2	1	4	2	0	3	10
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	7	18	34	51	551	652
TOTAL	8	21	38	51	558	676

NUMBER OF HITS 559 PERCENTAGE 0.8270

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	1	0	1	1	3
2	1	7	5	5	6	24
3	0	6	8	4	2	20
4	0	2	2	4	4	12
5	7	5	23	37	545	617
TOTAL	8	21	36	51	558	676

NUMBER OF HITS 564 PERCENTAGE 0.8343

LOW CONTINGENCY PROBABILITIES

OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	1	2	2	10	15
2	1	14	11	10	22	108
3	0	1	3	7	1	7
4	1	4	13	15	29	62
5	6	1	9	22	446	484
TOTAL	8	21	38	51	558	676

NUMBER OF HITS 478 PERCENTAGE 0.7071

MULTIPLE DISCRIMINANT ANALYSIS

OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	5	3	2	1	11
3	0	6	5	5	0	16
4	0	1	3	4	1	9
5	9	10	27	40	556	642
TOTAL	9	21	38	51	558	676

NUMBER OF HITS 570 PERCENTAGE 0.8432

VERIFICATION OF 3 HOUR VISIBILITY FORECASTS
ATLANTIC CITY, N.J. AIRPORT
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

PERSISTENCE OBSERVED							SUBJECTIVE OBSERVED						
FORE- CAST	1	2	3	4	5	TOTAL	FORE- CAST	1	2	3	4	5	TOTAL
1	7	2	2	3	10	24	1	1	0	1	4	0	6
2	0	8	6	3	9	26	2	5	6	4	0	7	22
3	1	3	4	3	6	17	3	4	3	8	7	19	41
4	2	1	0	2	8	13	4	2	4	3	7	18	34
5	3	3	10	24	99	619	5	1	4	6	17	58	59
TOTAL	13	17	22	33	612	699	TOTAL	13	17	22	33	612	699
NUMBER OF HITS 600 PERCENTAGE 0.8504							NUMBER OF HITS 590 PERCENTAGE 0.8491						

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE OBSERVED							GROUPING OBSERVED						
FORE- CAST	1	2	3	4	5	TOTAL	FORE- CAST	1	2	3	4	5	TOTAL
1	5	3	0	3	1	12	1	7	2	3	3	11	26
2	0	4	2	1	0	7	2	0	0	0	1	1	2
3	0	0	0	0	0	0	3	0	6	3	2	4	17
4	0	0	0	0	0	0	4	0	0	0	0	3	3
5	6	10	20	31	611	690	5	6	9	14	29	99	691
TOTAL	13	17	22	33	612	699	TOTAL	13	17	22	33	612	699
NUMBER OF HITS 620 PERCENTAGE 0.8870							NUMBER OF HITS 609 PERCENTAGE 0.8699						

LOW CONFIDENCE PROGNOSIS OBSERVED							MULTIPLE DISCRIMINANT ANALYSIS OBSERVED						
FORE- CAST	1	2	3	4	5	TOTAL	FORE- CAST	1	2	3	4	5	TOTAL
1	7	9	8	6	10	48	1	7	4	3	3	11	28
2	0	0	0	0	4	4	2	0	0	0	0	0	0
3	2	4	4	5	8	23	3	0	6	3	2	0	11
4	1	0	0	4	8	13	4	0	0	0	0	0	0
5	3	4	10	20	974	611	5	6	7	16	30	601	660
TOTAL	13	17	22	33	612	699	TOTAL	13	17	22	33	612	699
NUMBER OF HITS 984 PERCENTAGE 0.9426							NUMBER OF HITS 611 PERCENTAGE 0.8741						

VERIFICATION OF 5 MPH VISIBILITY FORECASTS
ATLANTIC CITY, N.J. AIRPORT
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	1	2	19	22
2	1	3	7	2	13	26
3	1	0	3	2	10	16
4	0	0	1	7	10	13
5	4	4	7	14	557	586
TOTAL	6	7	19	22	609	663

NUMBER OF HITS 565 PERCENTAGE 0.8522

FORE-CAST	SINGLE TIME OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0		1	1
2	3	3	2	3	2	13
3	1	2	4	5	13	30
4	1	0	4	5	12	22
5	1	2	4	9	581	597
TOTAL	6	7	19	22	609	663

NUMBER OF HITS 598 PERCENTAGE 0.9020

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	1	2	7	10
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	6	7	18	20	602	653
TOTAL	6	7	19	22	609	663

NUMBER OF HITS 602 PERCENTAGE 0.9080

GRIPPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	2	2	4	8
2	0	0	0	0	0	0
3	0	0	0	0	3	3
4	1	3	1	0	7	12
5	5	4	16	20	595	640
TOTAL	6	7	19	22	609	663

NUMBER OF HITS 595 PERCENTAGE 0.8974

LOW CONTINGENCY PROGNOSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	1	1	5	4	30	41
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	5	6	14	18	579	622
TOTAL	6	7	19	22	609	663

NUMBER OF HITS 580 PERCENTAGE 0.8748

MULTIPLE DISCRIMINANT ANALYSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	1	0	11	12
2	0	0	0	0	0	0
3	0	1	0	0	0	1
4	0	0	0	0	0	0
5	4	6	18	22	598	640
TOTAL	6	7	19	22	609	663

NUMBER OF HITS 594 PERCENTAGE 0.8974

VERIFICATION OF 7-DAY WEATHER FORECASTS
ATLANTIC CITY, N. J. AIRPORT
IN VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	1	0	20	21
2	1	3	5	1	15	25
3	2	1	1	0	12	16
4	0	0	0	0	14	14
5	7	3	12	13	566	591
TOTAL	10	7	19	14	607	657

NUMBER OF HITS 550 PERCENTAGE 0.8371

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	1	1
2	2	2	1	0	7	12
3	1	2	4	2	13	22
4	1	3	1	2	15	22
5	6	0	9	10	571	596
TOTAL	10	7	19	14	607	657

NUMBER OF HITS 584 PERCENTAGE 0.8899

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	1	0	8	9
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	10	7	18	14	599	648
TOTAL	10	7	19	14	607	657

NUMBER OF HITS 599 PERCENTAGE 0.9117

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	1	0	0	1
2	0	0	0	0	0	0
3	0	2	0	0	1	3
4	0	0	0	0	0	0
5	10	7	18	14	606	655
TOTAL	10	7	19	14	607	657

NUMBER OF HITS 606 PERCENTAGE 0.9224

LONG CONTINGENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	1	3	6	1	35	46
2	1	0	1	1	27	30
3	2	1	1	0	12	16
4	0	0	0	0	0	0
5	5	3	11	12	533	564
TOTAL	10	7	19	14	607	657

NUMBER OF HITS 535 PERCENTAGE 0.8143

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	10	7	19	14	607	657
TOTAL	10	7	19	14	607	657

NUMBER OF HITS 607 PERCENTAGE 0.9240

VERIFICATION OF 2 HOUR CEILING FORECASTS
WESTOVER AFB, CHICPEE, MASS.
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	8	3	0	2	2	15
2	5	8	5	0	0	18
3	0	7	27	7	3	44
4	0	3	6	44	35	88
5	4	3	5	18	455	485
TOTAL	17	24	43	71	495	650

NUMBER OF HITS 542 PERCENTAGE 0.8338

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	3	2	0	1	1	7
2	11	10	8	0	1	30
3	0	8	24	9	3	44
4	0	3	7	44	22	76
5	3	1	4	17	468	493
TOTAL	17	24	43	71	495	650

NUMBER OF HITS 549 PERCENTAGE 0.8446

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	4	3	0	2	2	16
2	1	11	7	0	0	23
3	0	5	26	4	3	38
4	0	5	6	50	25	86
5	3	0	4	15	465	487
TOTAL	17	24	43	71	495	650

NUMBER OF HITS 561 PERCENTAGE 0.8631

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	9	3	0	2	2	16
2	4	10	6	0	0	20
3	1	10	28	8	3	50
4	0	1	6	40	24	71
5	3	0	3	21	466	493
TOTAL	17	24	43	71	495	650

NUMBER OF HITS 553 PERCENTAGE 0.8508

LOW CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	8	3	0	2	2	15
2	5	8	5	0	0	18
3	0	7	27	7	3	44
4	0	3	6	44	35	88
5	4	3	5	18	455	485
TOTAL	17	24	43	71	495	650

NUMBER OF HITS 542 PERCENTAGE 0.8338

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	10	3	0	2	2	17
2	3	13	8	0	0	24
3	0	4	24	6	1	35
4	0	2	4	42	10	58
5	4	2	7	21	482	516
TOTAL	17	24	43	71	495	650

NUMBER OF HITS 571 PERCENTAGE 0.8785

VERIFICATION OF 3 HOUR CEILING FORECASTS
WESTOVER AFB, CHICUPEE, MASS.
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	9	3	0	2	2	16
2	4	11	8	1	0	24
3	0	8	27	5	4	44
4	0	4	6	49	24	83
5	3	0	5	16	470	494
TOTAL	16	26	46	73	500	661

NUMBER OF HITS 566 PERCENTAGE 0.8563

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	3	0	1	2	0	6
2	1	8	2	0	0	11
3	0	6	24	9	4	43
4	0	4	9	42	35	90
5	12	8	10	20	461	511
TOTAL	16	26	46	73	500	661

NUMBER OF HITS 538 PERCENTAGE 0.8139

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	9	5	3	2	2	21
2	3	7	2	0	1	13
3	0	4	17	7	3	31
4	0	8	19	40	26	93
5	4	2	5	24	468	503
TOTAL	16	26	46	73	500	661

NUMBER OF HITS 541 PERCENTAGE 0.8185

LUND CONTINGENCY PROGNOSIS

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	9	3	0	2	2	16
2	4	11	8	1	0	24
3	0	8	27	5	4	44
4	0	4	6	49	24	83
5	3	0	5	16	470	494
TOTAL	16	26	46	73	500	661

NUMBER OF HITS 566 PERCENTAGE 0.8563

MULTIPLE DISCRIMINANT ANALYSIS

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	4	4	0	2	0	10
2	2	7	4	0	0	13
3	1	6	23	10	2	42
4	0	6	8	32	11	57
5	4	3	11	24	487	539
TOTAL	16	26	46	73	500	661

NUMBER OF HITS 551 PERCENTAGE 0.8336

VERIFICATION OF 4 HOUR CEILING FORECASTS
WESTOVER AFB, CHICPEE, MASS.
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	3	2	2	2	7	15
2	1	9	7	6	2	25
3	1	5	24	8	10	48
4	1	4	9	36	29	79
5	1	1	9	27	449	487
TOTAL	7	21	51	79	497	655

NUMBER OF HITS 521 PERCENTAGE 0.7954

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	1	0	0	2	4
2	3	6	4	4	3	20
3	2	10	21	12	3	48
4	0	3	15	39	36	93
5	1	1	11	24	453	490
TOTAL	7	21	51	79	497	655

NUMBER OF HITS 520 PERCENTAGE 0.7939

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	1	0	1
2	1	2	0	2	0	5
3	1	10	25	9	10	55
4	1	3	6	24	20	54
5	4	6	20	43	467	540
TOTAL	7	21	51	79	497	655

NUMBER OF HITS 518 PERCENTAGE 0.7908

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	3	3	3	3	8	20
2	1	7	6	2	0	16
3	1	5	19	6	7	38
4	1	5	14	31	20	71
5	1	1	9	37	462	510
TOTAL	7	21	51	79	497	655

NUMBER OF HITS 522 PERCENTAGE 0.7969

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	3	2	2	2	7	16
2	1	9	7	6	2	25
3	1	5	24	8	10	48
4	1	4	9	36	29	79
5	1	1	9	27	444	487
TOTAL	7	21	51	79	497	655

NUMBER OF HITS 521 PERCENTAGE 0.7954

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	3	1	2	1	2	9
2	1	2	2	1	1	7
3	1	11	29	11	2	54
4	0	3	5	26	7	41
5	2	4	13	40	485	544
TOTAL	7	21	51	79	497	655

NUMBER OF HITS 545 PERCENTAGE 0.8321

VERIFICATION OF 6 HOUR CEILING FORECASTS
WESTOVER AFB, CHICOPEE, MASS.
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	2	4	9	6
2	2	2	7	8	6	25
3	2	5	19	15	6	47
4	1	7	16	31	32	87
5	0	3	5	46	440	494
TOTAL	5	18	49	104	493	669

NUMBER OF HITS 492 PERCENTAGE 0.7344

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	0	1	0		3
2	2	6	10	1	1	20
3	3	5	20	11	3	39
4	1	3	13	51	39	107
5	1	4	5	41	449	510
TOTAL	5	18	49	104	493	669

NUMBER OF HITS 527 PERCENTAGE 0.7877

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	2	3	12	7	4	26
4	3	3	19	21	14	62
5	0	12	19	74	475	579
TOTAL	5	18	49	104	493	669

NUMBER OF HITS 510 PERCENTAGE 0.7623

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	1	0	2	3
2		1	4	3	7	17
3	0	3	12	8	3	26
4	2	5	18	32	18	75
5	1	3	14	61	463	548
TOTAL	5	18	49	104	493	669

NUMBER OF HITS 508 PERCENTAGE 0.7593

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	2	1	1	3	4	14
2	0	0	0	0	0	0
3	3	9	33	31	16	92
4	0	4	8	35	72	119
5	0	4	4	35	401	444
TOTAL	5	18	49	104	493	669

NUMBER OF HITS 471 PERCENTAGE 0.7040

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	1	2	1	0	4
2	2	1	2	3	1	9
3	2	3	20	8	2	35
4	0	7	14	33	8	62
5	1	6	11	59	462	559
TOTAL	5	18	49	104	493	669

NUMBER OF HITS 536 PERCENTAGE 0.8012

VERIFICATION OF 2 HOUR VISIBILITY FORECASTS
WESTOVER AFB, CHICOPEE, MASS.
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	12	2	2	2	0	18
2	2	5	7	1	0	15
3	8	4	20	5	4	41
4	1	1	14	15	14	45
5	1	2	11	27	522	563
TOTAL	24	14	54	50	540	682

NUMBER OF HITS 574 PERCENTAGE 0.8416

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	4	2	1	0	0	7
2	10	3	9	0	0	22
3	17	9	32	12	8	71
4	0	0	7	24	26	57
5	0	0	5	14	506	525
TOTAL	24	14	54	50	540	682

NUMBER OF HITS 569 PERCENTAGE 0.8343

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	15	4	3	2	0	24
2	2	1	0	0	0	3
3	4	8	21	0	1	34
4	0	0	2	7	2	11
5	3	1	28	41	537	610
TOTAL	24	14	54	50	540	682

NUMBER OF HITS 581 PERCENTAGE 0.8519

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	16	4	4	2	0	26
2	1	2	2	0	0	5
3	5	6	27	13	4	55
4	1	0	11	2	4	18
5	1	2	10	33	532	578
TOTAL	24	14	54	50	540	682

NUMBER OF HITS 579 PERCENTAGE 0.8490

LOW CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	15	4	3	2	0	24
2	5	10	50	46	141	256
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	0	0	1	2	399	402
TOTAL	24	14	54	50	540	682

NUMBER OF HITS 424 PERCENTAGE 0.6217

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	14	4	7	3	0	32
2	2	4	3	0	0	9
3	4	4	30	4	2	44
4	0	0	7	20	6	33
5	0	0	7	23	532	564
TOTAL	24	14	54	50	540	682

NUMBER OF HITS 564 PERCENTAGE 0.8270

VERIFICATION OF 3 HOUR VISIBILITY FORECASTS
WESTOVER AFB, CHICPELI, MASS.
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	14	4	2	2	0	24
2	5	4	3	0	0	12
3	4	5	10	3	3	45
4	0	0	10	24	13	47
5	0	1	6	19	525	551
TOTAL	25	14	51	48	541	679

NUMBER OF HITS 599 PERCENTAGE 0.8822

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	5	1	1	1	0	8
2	9	4	5	1	0	19
3	9	6	11	5	3	44
4	0	0	5	7	9	21
5	2	3	21	14	527	567
TOTAL	25	14	51	48	541	679

NUMBER OF HITS 562 PERCENTAGE 0.8277

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	13	2	5	2	0	22
2	2	5	4	3	0	14
3	5	3	15	11	5	39
4	1	0	4	1	1	7
5	4	4	23	31	535	597
TOTAL	25	14	51	48	541	679

NUMBER OF HITS 569 PERCENTAGE 0.8380

LUO CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	12	2	1	2	0	17
2	3	5	6	1	0	15
3	7	2	9	0	2	20
4	1	5	23	17	42	88
5	2	0	12	24	497	535
TOTAL	25	14	51	48	541	679

NUMBER OF HITS 540 PERCENTAGE 0.7953

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	4	3	2	2	0	15
2	2	0	2	0	0	4
3	10	7	11	2	2	32
4	0	0	6	3	4	15
5	5	4	24	41	535	613
TOTAL	25	14	51	48	541	679

NUMBER OF HITS 557 PERCENTAGE 0.8203

VERIFICATION OF 4 HOUR VISIBILITY FORECASTS
WESTOVER AFB, CHICPEE, MASS.
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	5	2	10	2	4	23
2	1	2	5	0	4	12
3	2	6	22	7	9	46
4	2	2	12	12	18	46
5	2	1	12	22	508	545
TOTAL	12	13	61	43	543	672

NUMBER OF HITS 549 PERCENTAGE 0.8170

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	3	1	1	0	0	5
2	1	1	2	1	4	9
3	4	7	23	7	11	52
4	3	3	23	15	26	70
5	1	1	12	20	502	536
TOTAL	12	13	61	43	543	672

NUMBER OF HITS 544 PERCENTAGE 0.8095

CLIMATOLOGICAL EFFICIENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	12	13	61	43	543	672
TOTAL	12	13	61	43	543	672

NUMBER OF HITS 543 PERCENTAGE 0.8080

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	5	4	12	1	6	28
2	1	0	8	1	1	11
3	2	2	12	4	5	25
4	0	3	9	6	4	22
5	4	4	20	31	527	586
TOTAL	12	13	61	43	543	672

NUMBER OF HITS 550 PERCENTAGE 0.8185

LONG CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	5	2	10	2	4	23
2	1	2	5	0	4	12
3	2	6	22	7	9	46
4	1	3	21	12	135	174
5	1	0	3	2	491	497
TOTAL	12	13	61	43	543	672

NUMBER OF HITS 452 PERCENTAGE 0.6726

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	4	2	6	2	2	16
2	0	1	0	0	0	1
3	1	4	16	3	9	33
4	0	0	0	0	0	0
5	5	6	19	18	532	670
TOTAL	12	13	61	43	543	672

NUMBER OF HITS 561 PERCENTAGE 0.8348

VERIFICATION OF 6 HOUR VISIBILITY FORECASTS
 WESTOVER AFB, CHICOPEE, MASS.
 THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	2	2	2	3	14	23
2	1	0	3	2	6	12
3	3	3	14	9	13	42
4	2	4	7	12	17	42
5	1	2	14	31	472	~20
TOTAL	9	11	40	57	522	639

NUMBER OF HITS 500 PERCENTAGE 0.7825

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	1	1	0	0	3
2	0	1	7	2	4	14
3	3	3	11	10	4	31
4	4	5	7	13	23	52
5	1	1	14	32	491	539
TOTAL	9	11	40	57	522	639

NUMBER OF HITS 517 PERCENTAGE 0.8091

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	2	2	2	2	2	10
2	0	0	0	0	0	0
3	2	1	6	4	6	19
4	0	0	0	0	0	0
5	5	8	32	51	514	610
TOTAL	9	11	40	57	522	639

NUMBER OF HITS 522 PERCENTAGE 0.8169

GROUPING
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	1	5	1	2	10
2	1	0	0	0	3	4
3	1	3	7	7	13	31
4	2	2	3	4	6	17
5	4	5	25	45	498	577
TOTAL	9	11	40	57	522	639

NUMBER OF HITS 510 PERCENTAGE 0.7981

LAND CONTINGENCY PROGNOSIS
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	2	0	2	3	8	15
2	1	2	6	3	2	14
3	3	5	14	14	28	74
4	2	1	13	28	158	202
5	1	3	5	9	316	334
TOTAL	9	11	40	57	522	639

NUMBER OF HITS 362 PERCENTAGE 0.5665

MULTIPLE DISCRIMINANT ANALYSIS
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	2	2	1	0	0	5
2	0	0	0	0	0	0
3	2	2	2	3	2	11
4	0	0	0	0	0	0
5	5	7	37	54	0	623
TOTAL	9	11	40	57	522	639

NUMBER OF HITS 524 PERCENTAGE 0.8200

VERIFICATION OF 2 HOUR CEILING FORECASTS
WASHINGTON NATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	2	0	0	0	3
2	0	2	2	1	0	5
3	1	0	22	11	3	37
4	0	0	6	17	13	36
5	1	0	1	14	560	576
TOTAL	3	4	31	43	576	657

NUMBER OF HITS 602 PERCENTAGE 0.9163

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	1	3	1	1	0	6
3	1	1	23	11	3	39
4	0	0	6	17	13	36
5	1	0	1	14	560	576
TOTAL	3	4	31	43	576	657

NUMBER OF HITS 603 PERCENTAGE 0.9177

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	2	0	1	0	4
2	1	1	7	1	1	11
3	0	1	15	7	2	25
4	0	0	8	19	12	39
5	1	0	1	15	561	578
TOTAL	3	4	31	43	576	657

NUMBER OF HITS 597 PERCENTAGE 0.9087

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	2	0	0	0	3
2	0	2	2	1	0	5
3	1	0	22	11	3	37
4	0	0	7	28	84	119
5	1	0	0	3	489	493
TOTAL	3	4	31	43	576	657

NUMBER OF HITS 542 PERCENTAGE 0.8250

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	2	0	0	0	3
2	0	1	3	2	0	6
3	0	1	17	7	0	25
4	0	0	7	16	10	33
5	2	0	4	18	566	590
TOTAL	3	4	31	43	576	657

NUMBER OF HITS 601 PERCENTAGE 0.9149

VERIFICATION OF 3 HOUR CEILING FORECASTS
WASHINGTON NATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	0	0	0	1	2
2	0	1	3	1	2	7
3	0	0	10	2	0	12
4	0	0	6	13	9	28
5	1	1	3	16	471	492
TOTAL	2	2	22	32	483	541

NUMBER OF HITS 496 PERCENTAGE 0.9168

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	0	3	0	2	5
3	0	1	12	9	3	25
4	0	0	4	13	16	33
5	2	1	3	10	462	478
TOTAL	2	2	22	32	483	541

NUMBER OF HITS 487 PERCENTAGE 0.9002

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	0	3	0	1	4
3	0	1	4	1	2	8
4	0	0	12	15	9	36
5	2	1	3	16	471	493
TOTAL	2	2	22	32	483	541

NUMBER OF HITS 490 PERCENTAGE 0.9057

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	1	0	0	0	1	2
2	0	1	3	1	0	5
3	0	0	9	2	3	14
4	0	0	6	10	6	22
5	1	1	4	19	473	498
TOTAL	2	2	22	32	483	541

NUMBER OF HITS 494 PERCENTAGE 0.9131

LOW CONTINGENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	1	0	0	0	1	2
2	0	1	1	1	2	5
3	0	2	10	2	0	12
4	0	1	8	22	75	106
5	1	0	1	7	405	414
TOTAL	2	2	22	32	483	541

NUMBER OF HITS 439 PERCENTAGE 0.8115

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
	0	0	0	0	0	0
2	0	0	1	1	0	2
3	0	1	12	3	3	19
4	0	0	6	8	4	18
5	2	1	3	20	476	502
TOTAL	2	2	22	32	483	541

NUMBER OF HITS 494 PERCENTAGE 0.9131

VERIFICATION OF 5 HOUR CEILING FORECASTS
WASHINGTON NATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	2	2
2	0	1	3	2	1	7
3	0	0	5	6	2	13
4	0	1	6	10	10	27
5	0	3	4	14	474	495
TOTAL	0	5	18	32	489	544

NUMBER OF HITS 490 PERCENTAGE 0.9007

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	0	3	2	0	5
3	0	1	8	7	3	19
4	0	1	6	11	21	39
5	0	3	1	12	465	481
TOTAL	0	5	18	32	489	544

NUMBER OF HITS 484 PERCENTAGE 0.8897

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	0	1	1	0	2
3	0	0	4	1	1	6
4	0	0	5	8	5	18
5	0	5	8	22	483	518
TOTAL	0	5	18	32	489	544

NUMBER OF HITS 495 PERCENTAGE 0.9099

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	1	11	10	5	27
4	0	0	3	5	3	11
5	0	4	4	17	481	506
TOTAL	0	5	18	32	489	544

NUMBER OF HITS 497 PERCENTAGE 0.9136

LOW CONFIDENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	2	2
2	0	1	3	2	1	7
3	0	0	5	6	2	13
4	0	2	9	14	75	105
5	0	2	1	5	409	417
TOTAL	0	5	18	32	489	544

NUMBER OF HITS 434 PERCENTAGE 0.7976

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	1	8	8	3	20
4	0	1	4	5	4	14
5	0	3	6	19	482	510
TOTAL	0	5	18	32	489	544

NUMBER OF HITS 495 PERCENTAGE 0.9100

VERIFICATION OF 7 HOUR CEILING FORECASTS
WASHINGTON NATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	3	3
2	0	1	2	1	7	11
3	0	3	4	12	6	25
4	0	2	6	10	17	35
5	1	2	9	22	573	607
TOTAL	1	6	21	45	606	681

NUMBER OF HITS 588 PERCENTAGE 0.8634

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	2	3	1	2	8
3	0	3	6	10	7	26
4	0	2	7	15	19	43
5	1	1	5	19	578	604
TOTAL	1	8	21	45	606	681

NUMBER OF HITS 601 PERCENTAGE 0.8825

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	1	0	3	2	6
4	0	0	0	0	0	0
5	1	7	21	42	604	675
TOTAL	1	8	21	45	606	681

NUMBER OF HITS 604 PERCENTAGE 0.8869

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	2	2
2	0	0	0	0	0	0
3	0	3	7	8	4	22
4	0	1	4	9	10	24
5	1	4	10	28	590	633
TOTAL	1	8	21	45	606	681

NUMBER OF HITS 606 PERCENTAGE 0.8899

LUND CONTINGENCY PROGNOSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	4	4
2	0	0	0	0	0	0
3	0	4	9	14	3	30
4	0	2	7	19	60	88
5	1	2	5	12	539	559
TOTAL	1	8	21	45	606	681

NUMBER OF HITS 567 PERCENTAGE 0.8326

MULTIPLE DISCRIMINANT ANALYSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	4	4	9	4	21
4	0	1	5	13	8	27
5	1	3	12	23	594	633
TOTAL	1	8	21	45	606	681

NUMBER OF HITS 611 PERCENTAGE 0.8972

VERIFICATION OF 2 HOUR VISIBILITY FORECASTS
WASHINGTON NATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	3	0	0	1	1	5
2	1	1	1	2	0	5
3	0	1	5	0	4	10
4	2	1	4	-	10	23
5	6	0	7	30	607	644
TOTAL	6	3	17	39	622	687

NUMBER OF HITS 622 PERCENTAGE 0.9054

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	2	1	1	0	1	5
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	1	5	6
5	4	2	16	30	616	676
TOTAL	6	3	17	39	622	687

NUMBER OF HITS 619 PERCENTAGE 0.9010

GROUPING

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	3	0	0	1	1	5
2	0	0	0	0	0	0
3	1	1	2	0	2	6
4	0	0	4	1	3	8
5	2	2	11	37	616	668
TOTAL	6	3	17	39	622	687

NUMBER OF HITS 622 PERCENTAGE 0.9054

LINE CONTINGENCY PROGNOSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	3	0	0	0	1	4
2	0	0	0	0	0	0
3	1	2	6	2	4	15
4	-	0	0	0	0	0
5	2	1	11	37	617	668
TOTAL	6	3	17	39	622	687

NUMBER OF HITS 626 PERCENTAGE 0.9112

MULTIPLE DISCRIMINANT ANALYSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	2	0	0	0	1	3
2	0	0	0	1	0	1
3	1	0	1	2	1	5
4	0	0	2	1	0	3
5	3	3	14	35	620	675
TOTAL	6	3	17	39	622	687

NUMBER OF HITS 624 PERCENTAGE 0.9083

VERIFICATION OF 3 HOUR VISIBILITY FORECASTS
WASHINGTON NATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	1	1	2	1	6
2	1	0	1	0	0	2
3	0	1	1	2	3	7
4	0	0	3	5	13	21
5	1	0	7	18	547	573
TOTAL	3	2	13	27	564	609

NUMBER OF HITS 554 PERCENTAGE 0.9097

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	0	2	0	2	4
3	2	1	2	4	4	13
4	1	1	2	6	10	20
5	0	0	7	17	548	572
TOTAL	3	2	13	27	564	609

NUMBER OF HITS 556 PERCENTAGE 0.9130

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	1	1	0	1	3
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	3	1	12	27	563	606
TOTAL	3	2	13	27	564	609

NUMBER OF HITS 563 PERCENTAGE 0.9245

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	1	1	0	2
2	0	0	0	0	0	0
3	1	2	3	2	5	13
4	0	0	1	0	1	2
5	2	0	8	24	598	592
TOTAL	3	2	13	27	564	609

NUMBER OF HITS 561 PERCENTAGE 0.9212

LUND-CONTINGENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	1	1	1	1	1	5
2	1	1	2	2	3	9
3	0	0	0	0	0	0
4	0	0	1	1	1	3
5	1	0	9	23	559	592
TOTAL	3	2	13	27	564	609

NUMBER OF HITS 562 PERCENTAGE 0.9229

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	1	0	0	0	2	3
3	0	1	0	0	0	1
4	1	0	0	0	0	1
5	1	1	13	27	562	604
TOTAL	3	2	13	27	564	609

NUMBER OF HITS 562 PERCENTAGE 0.9228

VERIFICATION OF 5 HOUR VISIBILITY FORECASTS
WASHINGTON NATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	2	0	4	7
2	0	0	0	0	3	3
3	0	0	1	1	7	9
4	1	0	2	7	12	22
5	2	2	6	17	628	655
TOTAL	3	3	11	25	654	696

NUMBER OF HITS 636 PERCENTAGE 0.9138

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	1	0	0	0	4	5
3	0	1	1	3	11	16
4	0	0	2	3	9	14
5	2	2	8	19	630	661
TOTAL	3	3	11	25	654	696

NUMBER OF HITS 634 PERCENTAGE 0.9109

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	3	3	11	25	654	696
TOTAL	3	3	11	25	654	696

NUMBER OF HITS 654 PERCENTAGE 0.9397

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	1	0	2	3
2	0	0	0	0	0	0
3	0	0	0	0	1	1
4	0	0	0	0	3	3
5	3	3	10	25	648	689
TOTAL	3	3	11	25	654	696

NUMBER OF HITS 648 PERCENTAGE 0.9310

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	1	1	0	1	3
2	1	0	0	1	1	3
3	0	0	3	3	13	19
4	0	0	0	1	0	1
5	2	2	7	20	639	670
TOTAL	3	3	11	25	654	696

NUMBER OF HITS 643 PERCENTAGE 0.9239

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	1	1
2	0	0	0	0	0	0
3	0	0	0	0	1	1
4	0	0	0	0	0	0
5	3	3	11	25	652	694
TOTAL	3	3	11	25	654	696

NUMBER OF HITS 652 PERCENTAGE 0.9368

VERIFICATION OF 7 HOUR VISIBILITY FORECASTS
WASHINGTON NATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	1	0	6	7
2	0	0	1	0	2	3
3	0	1	1	1	6	9
4	0	0	4	4	15	23
5	3	1	5	15	647	671
TOTAL	3	2	12	20	676	713

NUMBER OF HITS 652 PERCENTAGE 0.9144

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	1	0	0	0	3	4
3	0	0	2	4	16	22
4	0	0	1	1	8	10
5	2	2	9	15	649	677
TOTAL	3	2	12	20	676	713

NUMBER OF HITS 652 PERCENTAGE 0.9144

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	3	2	12	20	676	713
TOTAL	3	2	12	20	676	713

NUMBER OF HITS 676 PERCENTAGE 0.9481

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	1	1	3	5
4	0	0	1	0	0	1
5	3	2	10	19	673	707
TOTAL	3	2	12	20	676	713

NUMBER OF HITS 674 PERCENTAGE 0.9453

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	3	2	12	20	676	713
TOTAL	3	2	12	20	676	713

NUMBER OF HITS 676 PERCENTAGE 0.9481

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	3	2	12	20	676	713
TOTAL	3	2	12	20	676	713

NUMBER OF HITS 676 PERCENTAGE 0.9451

VERIFICATION OF 2 HOUR CEILING FORECASTS
IDLEWILD INTERNATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	9	8	2	1	4	24
2	7	38	7	3	5	60
3	0	8	32	10	9	59
4	0	7	14	70	34	125
5	1	7	13	28	1136	1185
TOTAL	17	60	60	112	1180	1453

NUMBER OF HITS 1285 PERCENTAGE 0.8844

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	7	5	2	0	3	17
2	9	41	7	4	6	67
3	0	8	32	10	9	59
4	0	7	14	70	34	125
5	1	7	13	28	1136	1185
TOTAL	17	60	60	112	1180	1453

NUMBER OF HITS 1286 PERCENTAGE 0.8851

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	3	3	0	1	1	8
2	11	42	9	3	6	71
3	0	6	29	10	6	51
4	2	10	13	48	23	96
5	1	7	17	50	1152	1227
TOTAL	17	60	60	112	1180	1453

NUMBER OF HITS 1274 PERCENTAGE 0.8766

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	9	8	2	1	3	23
2	7	39	8	4	11	69
3	0	7	27	10	8	52
4	0	6	16	61	33	116
5	1	8	15	36	1133	1193
TOTAL	17	60	60	112	1180	1453

NUMBER OF HITS 1269 PERCENTAGE 0.8734

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	2	3	1	0	0	6
2	8	33	8	3	3	55
3	1	9	26	7	6	49
4	0	8	13	47	12	80
5	6	15	20	55	1167	1263
TOTAL	17	60	60	112	1180	1453

NUMBER OF HITS 1275 PERCENTAGE 0.8775

VERIFICATION OF 3 HOUR CEILING FORECASTS
IDLEWILD INTERNATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	9	9	2	1	5	26
2	5	24	6	4	4	43
3	0	13	28	7	10	58
4	0	3	11	33	37	84
5	0	6	10	32	1024	1072
TOTAL	14	55	57	77	1080	1283

NUMBER OF HITS 1118 PERCENTAGE 0.8714

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	2	2	1	0	1	6
2	8	30	9	2	9	58
3	2	14	24	15	8	63
4	0	5	16	39	35	95
5	2	6	7	21	1027	1063
TOTAL	14	55	57	77	1080	1283

NUMBER OF HITS 1122 PERCENTAGE 0.8745

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	5	3	2	0	2	12
2	9	30	6	5	7	57
3	0	13	28	7	10	58
4	0	3	11	33	37	84
5	0	6	10	32	1024	1072
TOTAL	14	55	57	77	1080	1283

NUMBER OF HITS 1120 PERCENTAGE 0.8730

GROUPING

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	1	4	0	1	0	6
2	4	17	6	4	3	34
3	0	16	29	18	11	74
4	0	4	10	22	29	65
5	9	14	12	32	1037	1104
TOTAL	14	55	57	77	1080	1283

NUMBER OF HITS 1106 PERCENTAGE 0.8620

LUND-CONTINGENCY PROGNOSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	14	33	8	5	9	69
2	0	0	0	0	0	0
3	0	12	20	7	9	48
4	0	5	27	45	183	260
5	0	5	2	20	879	906
TOTAL	14	55	57	77	1080	1283

NUMBER OF HITS 958 PERCENTAGE 0.7467

MULTIPLE DISCRIMINANT ANALYSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	3	5	0	0	1	9
2	6	14	5	4	0	34
3	0	9	20	7	2	38
4	0	0	8	23	16	47
5	5	22	24	43	1061	1155
TOTAL	14	55	57	77	1080	1283

NUMBER OF HITS 1126 PERCENTAGE 0.8776

VERIFICATION OF SHORT-TERM FORECASTS
WITH 10-DAY INTERVALS
FOR VERIFICATION, CRITERION IS THE PERCENTAGE OF HITS

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	6	7	3	6	11	27
2	5	27	11	6	12	61
3	1	12	27	12	22	74
4	1	6	11	41	54	113
5	10	8	18	52	108	186
TOTAL	23	60	70	111	187	1451

NUMBER OF HITS 1169 PERCENTAGE 0.8074

FORE-CAST	SUSPECTED OBSERVED					TOTAL
	1	2	3	4	5	
1	6	2	5	6	0	7
2	7	22	10	7	16	54
3	4	19	33	16	17	79
4	7	6	15	45	45	111
5	9	12	12	41	109	185
TOTAL	23	60	70	111	187	1451

NUMBER OF HITS 1269 PERCENTAGE 0.8732

CLIMATOLOGICAL EXPECTANCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	2	3	0	0	1	6
2	5	21	5	4	7	42
3	1	12	25	10	15	63
4	0	2	4	8	14	28
5	15	22	34	49	115	235
TOTAL	23	60	70	111	187	1451

NUMBER OF HITS 1206 PERCENTAGE 0.8312

GRUPEING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	1	3	2	0	2	6
2	4	18	4	3	9	38
3	0	10	28	6	5	49
4	0	2	10	37	45	101
5	18	20	26	45	116	225
TOTAL	23	60	70	111	187	1451

NUMBER OF HITS 1210 PERCENTAGE 0.8399

LAND CONFIDENCE PROGNOSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	5	6	2	0	11	24
2	5	28	9	4	18	64
3	1	10	29	4	18	62
4	0	2	17	42	42	106
5	12	7	14	45	106	184
TOTAL	23	60	70	111	187	1451

NUMBER OF HITS 1158 PERCENTAGE 0.7981

MULTIPLE DISCRIMINANT ANALYSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	7	18	8	2	4	39
3	0	14	21	6	8	49
4	0	5	10	27	12	54
5	16	23	31	41	116	227
TOTAL	23	60	70	111	187	1451

NUMBER OF HITS 1226 PERCENTAGE 0.8450

VERIFICATION OF 7 HOUR CEILING FORECASTS
 INLEWICK INTERNATIONAL AIRPORT
 THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	6	3	2	1	15	27
2	8	20	4	9	20	61
3	1	15	16	18	24	74
4	3	7	17	29	57	113
5	6	16	21	69	106	1177
TOTAL	24	61	60	126	1181	1452

NUMBER OF HITS 1136 PERCENTAGE 0.7824

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	2	0	0	0	0	2
2	10	21	5	6	13	55
3	4	20	24	23	21	96
4	2	10	16	44	54	126
5	6	10	11	53	109	1173
TOTAL	24	61	60	126	1181	1452

NUMBER OF HITS 1188 PERCENTAGE 0.8182

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	1	3	0	0	2	6
3	1	7	12	10	17	47
4	0	0	0	0	0	0
5	22	51	44	116	1162	1399
TOTAL	24	61	60	126	1181	1452

NUMBER OF HITS 1177 PERCENTAGE 0.8106

GROUPING
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	2	13	4	3	7	29
3	0	3	6	4	0	13
4	2	10	10	12	18	52
5	20	35	40	107	1156	1358
TOTAL	24	61	60	126	1181	1452

NUMBER OF HITS 1187 PERCENTAGE 0.8175

LONG CONTINGENCY PROGNOSIS
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1		3	2	1	14	25
2	8	18	7	7	19	55
3	2	11	17	11	9	66
4	1	7	17	31	44	100
5	3	20	21	70	1095	1206
TOTAL	24	61	60	126	1181	1452

NUMBER OF HITS 1156 PERCENTAGE 0.7961

MULTIPLE DISCRIMINANT ANALYSIS
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	4	6	0	2	6	18
3	0	9	7	3	2	21
4	2	8	14	14	6	44
5	14	38	39	107	1167	1369
TOTAL	24	61	60	126	1181	1452

NUMBER OF HITS 1194 PERCENTAGE 0.8223

VERIFICATION OF 2 HOUR VISIBILITY FORECASTS
 IDLEWILD INTERNATIONAL AIRPORT
 THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	14	6	3	4	6	33
2	4	6	4	1	4	19
3	4	7	17	5	9	42
4	0	4	6	10	30	50
5	3	4	12	29	117	1221
TOTAL	25	27	42	49	1222	1365

NUMBER OF HITS 1220 PERCENTAGE 0.8938

FORE- CAST	CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	14	6	3	4	6	33
2	4	5	1	0	2	12
3	2	0	3	0	4	9
4	0	0	0	0	0	0
5	5	16	35	45	1210	1311
TOTAL	25	27	42	49	1222	1365

NUMBER OF HITS 1232 PERCENTAGE 0.9026

FORE- CAST	GROUPING OBSERVED					TOTAL
	1	2	3	4	5	
1	10	4	1	1	2	18
2	6	6	5	2	7	26
3	0	2	3	1	4	10
4	0	0	0	0	0	0
5	9	15	33	45	1209	1311
TOTAL	25	27	42	49	1222	1365

NUMBER OF HITS 1228 PERCENTAGE 0.8996

FORE- CAST	LUND CONTINGENCY PROGNOSIS OBSERVED					TOTAL
	1	2	3	4	5	
1	7	0	0	0	1	3
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	23	27	42	49	1221	1362
TOTAL	25	27	42	49	1222	1365

NUMBER OF HITS 1223 PERCENTAGE 0.8960

FORE- CAST	MULTIPLE DISCRIMINANT ANALYSIS OBSERVED					TOTAL
	1	2	3	4	5	
1	11	4	2	2	2	21
2	0	2	1	1	0	4
3	0	0	2	0	1	3
4	0	1	2	0	0	3
5	14	20	35	46	1219	1334
TOTAL	25	27	42	49	1222	1365

NUMBER OF HITS 1214 PERCENTAGE 0.8900

VERIFICATION OF 3 HOUR VISIBILITY FORECASTS
 IDLEWILD INTERNATIONAL AIRPORT
 THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE-CAST	PERSISTENCE OBSERVED					
	1	2	3	4	5	TOTAL
1	14	4	2	5	6	31
2	4	3	7	0	6	19
3	3	1	7	4	14	29
4	0	0	7	8	24	45
5	5	8	17	31	1151	1212
TOTAL	25	22	40	48	1201	1336

NUMBER OF HITS 1183 PERCENTAGE 0.8855

FORE-CAST	SUBJECTIVE OBSERVED					
	1	2	3	4	5	TOTAL
1	2	1	0	1	4	8
2	9	9	5	3	6	32
3	6	6	14	3	17	46
4	5	4	13	20	36	78
5	3	2	8	21	1138	1172
TOTAL	25	22	40	48	1201	1336

NUMBER OF HITS 1183 PERCENTAGE 0.8855

FORE-CAST	CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE OBSERVED					
	1	2	3	4	5	TOTAL
1	11	2	1	2	8	24
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	14	20	39	46	1193	1312
TOTAL	25	22	40	48	1201	1336

NUMBER OF HITS 1204 PERCENTAGE 0.9017

FORE-CAST	GROUPING OBSERVED					
	1	2	3	4	5	TOTAL
1	3	1	0	0	1	5
2	0	0	0	0	0	0
3	0	0	4	0	4	8
4	2	1	3	1	6	13
5	20	20	33	47	1190	1310
TOTAL	25	22	40	48	1201	1336

NUMBER OF HITS 1198 PERCENTAGE 0.8967

FORE-CAST	LUND CONTINGENCY PROGNOSIS OBSERVED					
	1	2	3	4	5	TOTAL
1	12	2	3	4	5	24
2	0	0	0	0	0	0
3	3	1	5	1	4	14
4	0	0	0	0	0	0
5	10	19	32	43	1194	1298
TOTAL	25	22	40	48	1201	1336

NUMBER OF HITS 1211 PERCENTAGE 0.9064

FORE-CAST	MULTIPLE DISCRIMINANT ANALYSIS OBSERVED					
	1	2	3	4	5	TOTAL
1	10	2	2	3	2	19
2	0	0	0	0	0	0
3	1	1	1	0	0	3
4	0	0	0	0	0	0
5	14	19	37	45	1199	1314
TOTAL	25	22	40	48	1201	1336

NUMBER OF HITS 1210 PERCENTAGE 0.9057

VERIFICATION OF 5 HOUR VISIBILITY FORECASTS
IDLEWILD INTERNATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	10	4	5	2	10	31
2	2	4	3	2	9	20
3	1	3	2	4	20	30
4	2	2	5	4	32	45
5	12	9	14	35	115	1105
TOTAL	27	22	29	47	1106	1311

NUMBER OF HITS 1135 PERCENTAGE 0.8658

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	4	3	0	1	2	10
2	7	5	2	2	11	27
3	5	5	9	3	27	59
4	1	2	4	9	44	60
5	10	7	14	27	1102	1160
TOTAL	27	22	29	47	1106	1311

NUMBER OF HITS 1129 PERCENTAGE 0.8612

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	2	1	0	0	1	4
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	25	21	25	47	1105	1307
TOTAL	27	22	29	47	1106	1311

NUMBER OF HITS 1107 PERCENTAGE 0.9054

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	1	2	1	0	2	6
2	1	0	0	0	2	3
3	1	3	5	1	3	13
4	0	0	0	0	0	0
5	24	17	23	46	1179	1289
TOTAL	27	22	29	47	1106	1311

NUMBER OF HITS 1185 PERCENTAGE 0.9039

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	12	10	10	6	33	71
2	1	2	0	0	13	16
3	0	1	2	3	9	15
4	1	1	0	1	1	4
5	13	8	17	37	1130	1205
TOTAL	27	22	29	47	1106	1311

NUMBER OF HITS 1147 PERCENTAGE 0.8749

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	27	22	29	47	1106	1311
TOTAL	27	22	29	47	1106	1311

NUMBER OF HITS 1106 PERCENTAGE 0.8437

VERIFICATION OF 7 HOUR VISIBILITY FORECASTS
IDLEWILD INTERNATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	10	0	4	2	15	31
2	3	1	5	1	10	20
3	2	3	3	1	22	31
4	1	2	4	2	36	45
5	15	12	26	44	1114	1211
TOTAL	31	18	42	50	1197	1338
NUMBER OF HITS 1130 PERCENTAGE 0.8445						

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	2	1	1	0	0	4
2	7	4	5	1	11	28
3	10	8	13	10	28	69
4	2	2	8	7	45	64
5	10	3	15	32	1113	1173
TOTAL	31	18	42	50	1197	1338
NUMBER OF HITS 1139 PERCENTAGE 0.8513						

FORE-CAST	CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	31	18	42	50	1197	1338
TOTAL	31	18	42	50	1197	1338
NUMBER OF HITS 1197 PERCENTAGE 0.8946						

FORE-CAST	GROUPING OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	2	2
4	0	0	0	0	0	0
5	31	18	42	50	1195	1336
TOTAL	31	18	42	50	1197	1338
NUMBER OF HITS 1195 PERCENTAGE 0.8931						

FORE-CAST	LUND CONTINGENCY PROGNOSIS OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	31	18	42	50	1197	1338
TOTAL	31	18	42	50	1197	1338
NUMBER OF HITS 1197 PERCENTAGE 0.8946						

FORE-CAST	MULTIPLE DISCRIMINANT ANALYSIS OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	31	18	42	50	1197	1338
TOTAL	31	18	42	50	1197	1338
NUMBER OF HITS 1197 PERCENTAGE 0.8946						

VERIFICATION OF 2 HOUR CEILING FORECASTS
OFFUTT AFB, OMAHA, NEBRASKA
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	1	1	0	0	3
2	0	21	2	4	1	28
3	0	2	9	1	2	14
4	0	3	2	60	26	91
5	0	4	2	70	532	558
TOTAL	1	31	16	85	561	694

NUMBER OF HITS 623 PERCENTAGE 0.8977

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	1	8	9
2	0	21	3	2	4	30
3	0	5	9	5	3	22
4	0	2	2	54	29	87
5	1	3	2	23	517	546
TOTAL	1	31	16	85	561	694

NUMBER OF HITS 601 PERCENTAGE 0.8660

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	1	0	1
2	1	22	3	3	1	30
3	0	2	9	1	2	14
4	0	3	2	60	26	91
5	0	4	2	70	532	558
TOTAL	1	31	16	85	561	694

NUMBER OF HITS 623 PERCENTAGE 0.8977

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	1	1	0	0	3
2	0	21	2	5	1	29
3	0	2	9	0	2	13
4	0	3	2	60	26	91
5	0	4	2	20	532	558
TOTAL	1	31	16	85	561	694

NUMBER OF HITS 623 PERCENTAGE 0.8977

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	1	1	0	0	3
2	0	21	2	4	1	28
3	0	2	9	1	2	14
4	0	4	3	65	69	141
5	0	3	1	15	489	508
TOTAL	1	31	16	95	561	694

NUMBER OF HITS 585 PERCENTAGE 0.8429

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	1	1	0	0	3
2	0	19	3	4	2	28
3	0	2	4	1	1	8
4	0	3	3	54	10	70
5	0	6	5	26	548	585
TOTAL	1	31	16	85	561	694

NUMBER OF HITS 626 PERCENTAGE 0.9020

VERIFICATION OF 4 HOUR CEILING FORECASTS
OFFUTT AFB, OMAHA, NEBRASKA
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	0	0	1	2	4
2	2	11	6	3	5	27
3	0	3	4	4	2	15
4	0	4	3	33	35	75
5	0	6	8	23	494	531
TOTAL	3	24	23	64	538	652

NUMBER OF HITS 545 PERCENTAGE 0.8359

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	2	1	1	4	9
2	0	9	7	3	5	24
3	1	8	6	8	5	28
4	1	1	4	36	29	71
5	0	4	5	16	495	520
TOTAL	3	24	23	64	538	652

NUMBER OF HITS 547 PERCENTAGE 0.8390

FORE-CAST	CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	0	0	0	1
2	3	12	7	5	8	35
3	0	0	1	1	0	2
4	0	5	7	26	26	64
5	0	6	8	32	504	550
TOTAL	3	24	23	64	538	652

NUMBER OF HITS 543 PERCENTAGE 0.8328

FORE-CAST	GROUPING OBSERVED					TOTAL
	1	2	3	4	5	
1	2	1	1	2	2	8
2	0	0	0	0	0	0
3	0	0	0	1	0	1
4	1	10	7	4	6	28
5	0	13	15	57	530	615
TOTAL	3	24	23	64	538	652

NUMBER OF HITS 536 PERCENTAGE 0.8221

FORE-CAST	LUND CONTINGENCY PROGNOSIS OBSERVED					TOTAL
	1	2	3	4	5	
1	1	0	0	1	2	4
2	2	11	6	3	5	27
3	0	1	3	1	0	5
4	0	7	8	48	74	137
5	0	5	6	11	457	479
TOTAL	3	24	23	64	538	652

NUMBER OF HITS 520 PERCENTAGE 0.7975

FORE-CAST	MULTIPLE DISCRIMINANT ANALYSIS OBSERVED					TOTAL
	1	2	3	4	5	
1	1	0	0	0	1	2
2	1	9	4	3	3	20
3	0	1	2	1	0	4
4	0	5	6	27	7	45
5	1	9	11	33	527	581
TOTAL	3	24	23	64	538	652

NUMBER OF HITS 566 PERCENTAGE 0.8681

VERIFICATION OF 6 HOUR CEILING FORECASTS
OFFUTT AFB, OMAHA, NEBRASKA
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	0	0	1	1	3
2	1	7	6	3	9	26
3	0	2	4	4	4	14
4	0	4	3	35	38	80
5	0	3	6	33	499	541
TOTAL	2	16	19	76	551	664

NUMBER OF HITS 546 PERCENTAGE 0.8223

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	2	0	1	6	9
2	1	5	5	5	5	21
3	0	2	6	9	5	22
4	1	3	3	36	38	81
5	0	4	5	25	497	531
TOTAL	2	16	19	76	551	664

NUMBER OF HITS 544 PERCENTAGE 0.8193

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	1	0	0	0	1
2	2	3	6	5	12	28
3	0	0	0	6	0	6
4	0	6	6	24	23	59
5	0	6	7	47	516	576
TOTAL	2	16	19	76	551	664

NUMBER OF HITS 543 PERCENTAGE 0.8178

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	2	1	0	2	1	6
2	0	0	0	0	0	0
3	0	0	0	0	1	1
4	0	1	1	4	1	7
5	0	14	18	70	548	650
TOTAL	2	16	19	76	551	664

NUMBER OF HITS 554 PERCENTAGE 0.8343

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	1	0	0	1	1	3
2	1	4	5	5	1	24
3	0	0	0	6	0	6
4	0	8	10	46	74	132
5	0	4	4	30	467	505
TOTAL	2	16	19	76	551	664

NUMBER OF HITS 512 PERCENTAGE 0.7711

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	1	0	1
2	1	7	7	5	2	22
3	0	0	0	2	0	2
4	0	5	4	25	13	47
5	1	4	8	43	536	592
TOTAL	2	16	19	76	551	664

NUMBER OF HITS 568 PERCENTAGE 0.8554

VERIFICATION OF 2 HOUR VISIBILITY FORECASTS
OFFUTT AFB, OMAHA, NEBRASKA
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	3	0	0	0	0	3
2	0	4	0	1	3	8
3	0	3	6	4	4	17
4	0	0	8	6	8	22
5	2	1	7	10	624	644
TOTAL	5	8	21	21	639	694

NUMBER OF HITS 643 PERCENTAGE 0.9265

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	3	0	0	0	1	4
2	0	0	0	1	0	1
3	0	5	5	5	6	21
4	0	3	7	8	14	32
5	2	0	9	7	618	636
TOTAL	5	8	21	21	639	694

NUMBER OF HITS 634 PERCENTAGE 0.9133

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	3	0	0	0	0	3
2	0	0	0	0	0	0
3	0	6	5	4	6	21
4	0	0	2	0	1	3
5	2	2	14	17	632	647
TOTAL	5	8	21	21	639	694

NUMBER OF HITS 640 PERCENTAGE 0.9222

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	2	0	0	0	0	2
2	0	1	0	0	0	1
3	0	4	6	5	5	20
4	0	1	5	2	4	12
5	3	2	10	14	630	659
TOTAL	5	8	21	21	639	694

NUMBER OF HITS 641 PERCENTAGE 0.9236

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	2	4	0	1	3	10
2	0	0	0	0	0	0
3	0	3	5	4	4	16
4	2	1	11	14	39	67
5	1	0	5	2	593	601
TOTAL	5	8	21	21	639	694

NUMBER OF HITS 614 PERCENTAGE 0.8847

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	3	0	0	0	1	4
2	0	0	0	0	0	0
3	0	7	5	2	5	19
4	0	0	1	2	1	4
5	2	1	15	17	632	647
TOTAL	5	8	21	21	639	694

NUMBER OF HITS 642 PERCENTAGE 0.9251

VERIFICATION OF 4 HOUR VISIBILITY FORECASTS
OFFUTT AFB, OMAHA, NEBRASKA
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	3	0	0	0	0	3
2	1	1	0	0	4	6
3	0	1	7	6	4	18
4	0	1	4	5	12	22
5	0	2	7	19	616	644
TOTAL	4	5	18	30	636	693

NUMBER OF HITS 632 PERCENTAGE 0.9120

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	2	0	0	0	0	2
2	1	0	2	0	0	3
3	1	1	3	5	11	21
4	0	4	4	6	16	30
5	0	0	9	19	609	637
TOTAL	4	5	18	30	636	693

NUMBER OF HITS 620 PERCENTAGE 0.8947

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	1	0	0	0	0	1
4	0	0	0	0	0	0
5	3	5	18	30	636	692
TOTAL	4	5	18	30	636	693

NUMBER OF HITS 636 PERCENTAGE 0.9177

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	1	0	0	0	0	1
2	0	0	0	0	0	0
3	1	2	3	3	0	9
4	0	0	1	0	7	8
5	2	3	14	27	629	675
TOTAL	4	5	18	30	636	693

NUMBER OF HITS 633 PERCENTAGE 0.9134

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	3	1	0	0	3	7
2	2	0	0	0	0	2
3	0	1	7	6	3	17
4	0	0	4	4	10	18
5	1	3	7	20	520	651
TOTAL	4	5	18	30	636	693

NUMBER OF HITS 634 PERCENTAGE 0.9149

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	3	0	0	0	1	4
2	0	0	0	0	0	0
3	0	0	1	0	0	1
4	1	1	2	0	1	5
5	0	4	15	30	634	683
TOTAL	4	5	18	30	636	693

NUMBER OF HITS 634 PERCENTAGE 0.9206

VERIFICATION OF 6 HOUR VISIBILITY FORECASTS
OFFUTT AFB, OMAHA, NEBRASKA
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	3	0	0	0	0	3
2	0	0	1	0	6	7
3	0	2	3	5	3	13
4	0	0	2	3	15	20
5	0	0	8	15	552	575
TOTAL	3	2	14	23	576	618

NUMBER OF HITS 561 PERCENTAGE 0.9078

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	0	2	0	0	2
3	3	0	0	5	5	13
4	0	1	1	4	12	18
5	0	1	11	14	559	585
TOTAL	3	2	14	23	576	618

NUMBER OF HITS 563 PERCENTAGE 0.9110

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	3	2	14	23	576	618
TOTAL	3	2	14	23	576	618

NUMBER OF HITS 576 PERCENTAGE 0.9320

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	2	0	0	0	0	2
2	0	0	0	0	0	0
3	0	0	1	1	2	4
4	0	0	0	0	0	0
5	1	2	13	22	574	612
TOTAL	3	2	14	23	576	618

NUMBER OF HITS 577 PERCENTAGE 0.9337

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	3	2	4	5	9	23
4	0	0	3	10	57	70
5	0	0	7	8	510	525
TOTAL	3	2	14	23	576	618

NUMBER OF HITS 524 PERCENTAGE 0.8479

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	1	0	0	0	0	1
2	0	0	0	1	0	1
3	0	1	0	0	1	2
4	0	0	0	0	0	0
5	2	1	14	22	575	614
TOTAL	3	2	14	23	576	618

NUMBER OF HITS 576 PERCENTAGE 0.9320

VERIFICATION OF 2 HOUR CEILING FORECASTS
 RANDOLPH AFB, SAN ANTONIO, TEXAS
 THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

PERSISTENCE OBSERVED						
FORE- CAST	1	2	3	4	5	TOTAL
1	4	2	4	1	0	11
2	0	4	7	2	1	14
3	0	6	74	27	16	123
4	0	0	14	52	18	84
5	0	2	14	19	425	460
TOTAL	4	14	113	101	460	692

NUMBER OF HITS 559 PERCENTAGE 0.8078

SUBJECTIVE OBSERVED						
FORE- CAST	1	2	3	4	5	TOTAL
1	1	1	2	1	1	6
2	2	6	6	2	0	16
3	1	6	75	26	16	124
4	0	1	19	48	27	95
5	0	0	11	22	416	449
TOTAL	4	14	113	101	460	692

NUMBER OF HITS 546 PERCENTAGE 0.7890

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	4	2	4	1	0	11
2	0	1	1	0	0	2
3	0	9	80	29	17	135
4	0	0	14	52	18	84
5	0	2	14	19	425	460
TOTAL	4	14	113	101	460	692

NUMBER OF HITS 562 PERCENTAGE 0.8121

GROUPING
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	3	4	4	1	0	12
2	0	1	3	1	0	5
3	1	6	75	26	37	125
4	0	2	19	55	25	101
5	0	1	12	20	413	451
TOTAL	4	14	113	101	460	692

NUMBER OF HITS 552 PERCENTAGE 0.7977

LONG CONTINGENCY PROGNOSIS
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	4	2	4	1	0	11
2	0	3	6	1	1	11
3	0	7	73	26	14	120
4	0	0	15	53	37	101
5	0	2	15	20	412	449
TOTAL	4	14	113	101	460	692

NUMBER OF HITS 545 PERCENTAGE 0.7876

MULTIPLE DISCRIMINANT ANALYSIS
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	4	3	5	1	0	13
2	0	1	3	1	0	5
3	0	0	78	33	18	137
4	0	0	14	41	13	68
5	0	2	13	25	429	469
TOTAL	4	14	113	101	460	692

NUMBER OF HITS 553 PERCENTAGE 0.7991

VERIFICATION OF 4 HOUR CEILING FORECASTS
 RANDOLPH AFB, SAN ANTONIO, TEXAS
 THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE-CAST	PERSISTENCE OBSERVED					
	1	2	3	4	5	TOTAL
1	0	4	4	2	1	11
2	0	2	9	0	2	13
3	0	3	39	29	49	120
4	0	1	11	40	26	78
5	0	0	18	35	405	458
TOTAL	0	10	61	106	483	660

NUMBER OF HITS 486 PERCENTAGE 0.7147

FORE-CAST	SUBJECTIVE OBSERVED					
	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	2	5	1	0	8
3	0	6	45	24	7	82
4	0	1	19	48	47	115
5	0	1	12	33	429	475
TOTAL	0	10	81	106	483	680

NUMBER OF HITS 524 PERCENTAGE 0.7706

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	4	4	2	1	11
2	0	0	2	0	0	2
3	0	4	39	16	7	66
4	0	2	18	40	57	117
5	0	0	18	48	418	484
TOTAL	0	10	61	106	483	660

NUMBER OF HITS 497 PERCENTAGE 0.7309

GROUPING
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	4	2	1	1	8
2	0	1	5	1	2	9
3	0	4	38	21	31	97
4	0	1	14	35	26	76
5	0	0	22	45	423	490
TOTAL	0	10	81	106	483	680

NUMBER OF HITS 497 PERCENTAGE 0.7309

LUND CONTINGENCY PROGNOSIS
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	4	3	2	1	10
2	0	2	5	0	0	7
3	0	3	42	24	40	109
4	0	1	13	45	38	97
5	0	0	18	35	404	457
TOTAL	0	10	61	106	483	660

NUMBER OF HITS 493 PERCENTAGE 0.7250

MULTIPLE DISCRIMINANT ANALYSIS
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	3	2	0	0	5
2	0	0	0	0	0	0
3	0	5	44	30	28	107
4	0	1	9	23	13	45
5	0	1	27	53	442	523
TOTAL	0	10	81	106	483	680

NUMBER OF HITS 509 PERCENTAGE 0.7485

VERIFICATION OF 6 HOUR CEILING FORECASTS
 RANDOLPH AFB, SAN ANTONIO, TEXAS
 THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	3	5	2	11
2	0	1	6	3	3	13
3	2	6	29	23	59	119
4	0	2	18	28	30	78
5	1	3	24	40	389	457
TOTAL	3	13	80	99	483	678

NUMBER OF HITS 447 PERCENTAGE 0.6593

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	1	0	1
2	1	2	6	1	0	10
3	1	7	48	21	26	103
4	0	1	19	38	38	96
5	1	3	7	38	419	468
TOTAL	3	13	80	99	483	678

NUMBER OF HITS 507 PERCENTAGE 0.748

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	1	0	0	1
2	0	0	2	0	0	2
3	2	7	28	20	9	66
4	0	2	9	6	6	23
5	1	4	40	73	468	586
TOTAL	3	13	80	99	483	678

NUMBER OF HITS 502 PERCENTAGE 0.7404

GROUPING
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	1	0	2	0	3
2	0	1	4	3	1	9
3	1	3	27	20	18	69
4	1	5	8	20	43	77
5	1	3	41	54	421	520
TOTAL	3	13	80	99	483	678

NUMBER OF HITS 469 PERCENTAGE 0.6917

LUND CONTINGENCY PROGNOSIS
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	1	3	5	2	11
2	2	5	17	7	14	45
3	0	1	1	1	0	3
4	0	3	35	46	79	163
5	1	3	24	40	388	456
TOTAL	3	13	80	99	483	678

NUMBER OF HITS 440 PERCENTAGE 0.6490

MULTIPLE DISCRIMINANT ANALYSIS
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	1	2	2	0	5
2	0	0	1	0	0	1
3	2	7	34	22	12	77
4	0	0	10	16	16	42
5	1	5	31	59	455	551
TOTAL	3	13	80	99	483	678

NUMBER OF HITS 505 PERCENTAGE 0.7448

VERIFICATION OF 2 HOUR VISIBILITY FORECASTS
 RANDOLPH AFB, SAN ANTONIO, TEXAS
 THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	4	0	3	1	4	12
2	1	1	2	1	0	5
3	3	0	7	3	5	18
4	0	1	6	4	7	18
5	1	2	5	15	626	649
TOTAL	9	4	23	24	642	702

NUMBER OF HITS 642 PERCENTAGE 0.9145

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	1	2	0	0	4
2	2	0	1	0	2	5
3	4	0	8	6	7	25
4	0	1	8	6	13	28
5	2	2	4	12	620	640
TOTAL	9	4	23	24	642	702

NUMBER OF HITS 635 PERCENTAGE 0.9046

FORE- CAST	CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	4	0	3	1	2	10
2	0	0	1	0	0	1
3	2	1	6	1	4	14
4	0	0	1	1	0	2
5	3	3	11	21	636	674
TOTAL	9	4	23	24	642	702

NUMBER OF HITS 647 PERCENTAGE 0.9217

FORE- CAST	GROUPING OBSERVED					TOTAL
	1	2	3	4	5	
1	3	0	3	2	3	11
2	1	0	1	0	0	2
3	2	1	7	0	5	15
4	0	0	2	2	2	6
5	3	3	10	20	632	668
TOTAL	9	4	23	24	642	702

NUMBER OF HITS 644 PERCENTAGE 0.9174

FORE- CAST	LAND CONTINGENCY PROGNOSIS OBSERVED					TOTAL
	1	2	3	4	5	
1	4	0	3	1	4	12
2	1	1	2	1	0	5
3	3	0	7	4	6	20
4	0	3	10	14	89	116
5	1	0	1	6	543	549
TOTAL	9	4	23	24	642	702

NUMBER OF HITS 569 PERCENTAGE 0.8105

FORE- CAST	MULTIPLE DISCRIMINANT ANALYSIS OBSERVED					TOTAL
	1	2	3	4	5	
1	2	0	2	1	0	5
2	1	0	0	0	0	1
3	2	0	5	4	1	12
4	0	0	0	0	0	0
5	4	4	16	19	641	684
TOTAL	9	4	23	24	642	702

NUMBER OF HITS 648 PERCENTAGE 0.9231

VERIFICATION OF 6 HOUR VISIBILITY FORECASTS
 RANDOLPH AFB, SAN ANTONIO, TEXAS
 THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	2	3	7	12
2	0	0	2	0	3	5
3	0	1	0	1	13	15
4	0	0	0	2	16	18
5	1	1	10	10	610	632
TOTAL	1	2	14	16	649	682

NUMBER OF HITS 612 PERCENTAGE 0.8974

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	1	1
2	0	0	0	0	1	1
3	1	0	4	5	7	17
4	0	1	1	1	13	16
5	0	1	9	10	627	647
TOTAL	1	2	14	16	649	682

NUMBER OF HITS 632 PERCENTAGE 0.9267

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	1	0	1
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	1	2	14	15	649	681
TOTAL	1	2	14	16	649	682

NUMBER OF HITS 649 PERCENTAGE 0.9516

GROUPING

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	3	2	5	10
2	0	0	0	0	0	0
3	0	0	0	1	2	3
4	0	0	0	0	0	0
5	1	2	11	13	642	669
TOTAL	1	2	14	16	649	682

NUMBER OF HITS 642 PERCENTAGE 0.9413

LUND CONTINGENCY PROGNOSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	2	3	7	12
2	0	0	2	0	3	5
3	0	1	6	2	122	131
4	0	0	0	1	9	10
5	1	1	4	10	508	524
TOTAL	1	2	14	16	649	682

NUMBER OF HITS 515 PERCENTAGE 0.7551

MULTIPLE DISCRIMINANT ANALYSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	1	1
4	0	0	0	0	0	0
5	1	2	14	16	648	681
TOTAL	1	2	14	16	649	682

NUMBER OF HITS 648 PERCENTAGE 0.9501

VERIFICATION OF 2 HOUR CEILING FORECASTS
MC GUIRE AFB, WRIGHTSTOWN, N.J.
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE-CAST	PERSISTENCE					TOTAL
	OBSERVED					
	1	2	3	4	5	
1	8	3	1	0	1	13
2	3	13	3	2	0	21
3	0	5	22	6	3	36
4	0	1	9	29	25	64
5	3	1	4	29	440	477
TOTAL	14	23	39	66	469	611

NUMBER OF HITS 512 PERCENTAGE 0.8380

FORE-CAST	SUBJECTIVE					TOTAL
	OBSERVED					
	1	2	3	4	5	
1	5	1	1	0	4	11
2	3	10	5	0	2	20
3	2	11	16	8	6	43
4	0	1	13	33	23	70
5	4	0	4	25	434	467
TOTAL	14	23	39	66	469	611

NUMBER OF HITS 498 PERCENTAGE 0.8151

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	8	3	1	0	1	13
2	2	8	2	1	0	13
3	1	10	23	7	3	44
4	0	1	9	29	25	64
5	3	1	4	29	440	477
TOTAL	14	23	39	66	469	611

NUMBER OF HITS 508 PERCENTAGE 0.8314

GROUPING

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	8	4	1	0	1	14
2	3	11	3	1	0	18
3	0	6	26	8	3	43
4	0	1	5	30	22	58
5	3	1	4	27	443	478
TOTAL	14	23	39	66	469	611

NUMBER OF HITS 518 PERCENTAGE 0.8478

LUND CONTINGENCY PROGNOSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	8	3	1	0	1	13
2	3	14	3	2	0	22
3	0	4	24	11	7	46
4	0	0	4	11	0	15
5	3	2	7	42	461	515
TOTAL	14	23	39	66	469	611

NUMBER OF HITS 518 PERCENTAGE 0.8478

MULTIPLE DISCRIMINANT ANALYSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	8	3	1	1	0	13
2	2	12	3	0	0	17
3	1	6	25	5	2	39
4	0	1	4	26	12	43
5	3	1	6	34	455	499
TOTAL	14	23	39	66	469	611

NUMBER OF HITS 526 PERCENTAGE 0.8609

VERIFICATION OF 4 HOUR CEILING FORECASTS
MCGUIRE AFB, WRIGHTSTOWN, N.J.
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	4	2	0	3	9
2	0	0	7	2	1	10
3	1	2	16	4	4	27
4	0	5	6	16	29	56
5	0	1	7	27	374	409
TOTAL	1	20	38	49	411	519

NUMBER OF HITS 414 PERCENTAGE 0.7977

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	3	0	0	2	5
2	1	4	4	1	1	11
3	0	7	14	9	5	35
4	0	2	9	23	28	62
5	0	4	11	16	375	406
TOTAL	1	20	38	49	411	519

NUMBER OF HITS 416 PERCENTAGE 0.8015

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	1	0	0	1	2
2	0	5	3	0	1	9
3	1	5	20	6	4	36
4	0	4	1	4	14	23
5	0	5	14	39	391	449
TOTAL	1	20	38	49	411	519

NUMBER OF HITS 420 PERCENTAGE 0.8092

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	4	3	0	2	9
2	0	8	5	1	1	15
3	1	2	14	5	2	24
4	0	3	6	13	9	31
5	0	3	10	30	397	440
TOTAL	1	20	38	49	411	519

NUMBER OF HITS 432 PERCENTAGE 0.8324

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	4	2	0	3	9
2	0	6	10	4	3	23
3	1	5	15	7	3	31
4	0	4	6	22	40	72
5	0	1	5	16	362	384
TOTAL	1	20	38	49	411	519

NUMBER OF HITS 405 PERCENTAGE 0.7803

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	2	1	0	0	3
2	0	2	1	0	0	3
3	1	11	18	10	2	42
4	0	2	3	11	3	19
5	0	3	15	28	406	452
TOTAL	1	20	38	49	411	519

NUMBER OF HITS 437 PERCENTAGE 0.8420

VERIFICATION OF 6 HOUR CEILING FORECASTS
MCGUIRE AFB, WRIGHTSTOWN, N.J.
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	3	0	6	9
2	2	2	6	6	2	18
3	1	6	8	7	6	28
4	1	5	9	18	23	56
5	1	2	5	32	368	408
TOTAL	5	15	31	63	405	519

NUMBER OF HITS 396 PERCENTAGE 0.7630

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	1	1	3	6
2	1	4	4	0	4	13
3	1	4	12	9	6	32
4	2	3	6	31	26	68
5	1	3	8	22	366	400
TOTAL	5	15	31	63	405	519

NUMBER OF HITS 413 PERCENTAGE 0.7958

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	1	0	1	2
2	2	1	1	2	0	6
3	1	7	13	11	8	40
4	0	0	0	0	0	0
5	2	7	16	50	396	471
TOTAL	5	15	31	63	405	519

NUMBER OF HITS 410 PERCENTAGE 0.7900

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	2	0	3	5
2	1	1	2	2	0	6
3	0	1	5	2	5	13
4	1	5	6	16	9	37
5	3	8	16	43	388	450
TOTAL	5	15	31	63	405	519

NUMBER OF HITS 410 PERCENTAGE 0.7900

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	1	1	3	5
2	0	2	7	9	59	77
3	2	9	10	13	4	38
4	0	1	4	11	10	26
5	3	3	9	29	329	373
TOTAL	5	15	31	63	405	519

NUMBER OF HITS 352 PERCENTAGE 0.6782

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	1	1	0	1	3
3	2	9	13	7	3	34
4	0	1	4	15	2	22
5	3	4	13	41	399	460
TOTAL	5	15	31	63	405	519

NUMBER OF HITS 428 PERCENTAGE 0.8247

VERIFICATION OF 2 HOUR VISIBILITY FORECASTS
MCGUIRE AFB, WRIGHTSTOWN, N.J.
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE-CAST	PERSISTENCE					
	OBSERVED					
	1	2	3	4	5	TOTAL
1	11	5	0	0	0	16
2	2	6	6	1	0	15
3	1	4	37	10	6	58
4	0	0	22	21	11	54
5	0	1	15	22	431	469
TOTAL	14	16	80	54	448	612
NUMBER OF HITS 506 PERCENTAGE 0.8268						

FORE-CAST	SUBJECTIVE					
	UNOBSERVED					
	1	2	3	4	5	TOTAL
1	6	5	3	0	0	14
2	3	2	7	1	2	15
3	2	7	41	14	9	73
4	2	0	20	25	71	78
5	1	2	9	14	406	432
TOTAL	14	16	80	54	448	612
NUMBER OF HITS 480 PERCENTAGE 0.7843						

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE						
FORE-CAST	OBSERVED					
	1	2	3	4	5	TOTAL
1	11	5	0	0	0	16
2	0	4	2	1	0	7
3	5	6	41	10	6	66
4	0	0	7	9	3	19
5	0	1	30	34	439	504
TOTAL	14	16	80	54	448	612
NUMBER OF HITS 504 PERCENTAGE 0.8235						

GROUPING						
FORE-CAST	OBSERVED					
	1	2	3	4	5	TOTAL
1	12	7	2	0	0	21
2	1	1	1	0	0	3
3	0	6	30	13	9	58
4	1	1	18	9	3	32
5	0	1	29	32	436	498
TOTAL	14	16	80	54	448	612
NUMBER OF HITS 488 PERCENTAGE 0.7974						

LUND CONTINGENCY PROGNOSIS						
FORE-CAST	OBSERVED					
	1	2	3	4	5	TOTAL
1	11	5	0	0	0	16
2	1	4	3	2	0	10
3	2	6	37	12	9	66
4	0	0	22	16	11	49
5	0	1	14	24	428	471
TOTAL	14	16	80	54	448	612
NUMBER OF HITS 496 PERCENTAGE 0.8105						

MULTIPLE DISCRIMINANT ANALYSIS						
FORE-CAST	OBSERVED					
	1	2	3	4	5	TOTAL
1	11	9	7	0	0	27
2	1	1	1	0	0	3
3	2	4	39	12	7	64
4	0	0	14	11	6	31
5	0	2	19	31	435	487
TOTAL	14	16	80	54	448	612
NUMBER OF HITS 497 PERCENTAGE 0.8121						

VERIFICATION OF 4 HOUR VISIBILITY FORECASTS
 MCGUIRE AFB, WRIGHTSTOWN, N.J.
 THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

PERSISTENCE
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	1	1	7	2	1	12
2	1	3	4	3	2	13
3	0	0	19	14	14	47
4	1	0	13	11	23	48
5	0	3	9	27	355	394
TOTAL	3	7	52	57	395	514

NUMBER OF HITS 389 PERCENTAGE 0.7568

SUBJECTIVE
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	1	1	1	1	1	5
2	0	0	4	1	3	8
3	1	2	18	6	9	38
4	1	1	20	18	34	74
5	0	3	9	29	348	389
TOTAL	3	7	52	57	395	514

NUMBER OF HITS 385 PERCENTAGE 0.7490

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	2	0	1	3
2	0	0	0	0	0	0
3	1	2	11	6	6	26
4	0	0	3	1	7	11
5	2	5	16	50	381	456
TOTAL	3	7	52	57	395	514

NUMBER OF HITS 333 PERCENTAGE 0.7446

GROUPING
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	1	2	8	2	1	14
2	0	0	0	0	1	1
3	1	2	14	5	6	28
4	0	0	3	5	7	15
5	1	3	27	45	380	456
TOTAL	3	7	52	57	395	514

NUMBER OF HITS 400 PERCENTAGE 0.7782

LOW CONTINGENCY PROGNOSIS
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	1	1	7	2	1	12
2	0	0	0	0	1	1
3	1	3	19	17	22	62
4	1	0	13	5	10	30
5	2	3	14	10	161	400
TOTAL	3	7	52	57	395	514

NUMBER OF HITS 346 PERCENTAGE 0.7510

MULTIPLE DISCRIMINANT ANALYSIS
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	2	1	5	1	1	10
2	0	0	0	0	0	0
3	1	0	25	15	12	53
4	0	0	5	4	5	14
5	0	6	17	37	377	437
TOTAL	3	7	52	57	395	514

NUMBER OF HITS 408 PERCENTAGE 0.7938

VERIFICATION OF 6 HOUR VISIBILITY FORECASTS
MCQUEEN AFB, WRIGHTSTOWN, N.J.
THE VERIFICATION CRITERION IS THE PERCENTAGE OF HITS

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	3	3	5	12
2	1	1	4	3	4	13
3	1	1	12	12	21	47
4	2	0	7	16	23	48
5	1	1	11	19	365	397
TOTAL	5	4	37	53	418	517

NUMBER OF HITS 374 PERCENTAGE 0.7421

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	2	1	1	5
2	1	1	4	0	3	9
3	2	1	6	4	9	22
4	0	1	13	17	36	67
5	2	0	12	31	169	414
TOTAL	5	4	37	53	418	517

NUMBER OF HITS 393 PERCENTAGE 0.7602

CLIMATOLOGICAL EXPECTANCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	1	1	0	1	3
2	0	0	0	0	0	0
3	2	2	9	5	4	22
4	0	0	0	0	0	0
5	3	1	27	48	413	492
TOTAL	5	4	37	53	418	517

NUMBER OF HITS 422 PERCENTAGE 0.8157

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	1	0	2	2	5
2	0	0	2	1	6	9
3	1	1	4	7	9	22
4	0	0	5	3	1	9
5	4	2	26	42	400	474
TOTAL	5	4	37	53	418	517

NUMBER OF HITS 405 PERCENTAGE 0.7834

LUND CONTINGENCY DIAGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	1	2	2	3	8
2	1	3	0	1	0	5
3	1	3	20	14	27	65
4	2	0	2	7	15	26
5	1	0	13	24	173	411
TOTAL	5	4	37	53	418	517

NUMBER OF HITS 500 PERCENTAGE 0.9671

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	1	1	0	0	2
2	0	0	0	0	0	0
3	1	2	7	4	6	20
4	0	0	1	0	0	1
5	4	1	26	44	412	487
TOTAL	5	4	37	53	418	517

NUMBER OF HITS 421 PERCENTAGE 0.8143

VERIFICATION OF 3 HOUR L-LLING FORECASTS
ATLANTIC CITY, N.J. AIRPORT
THE VERIFICATION CRITERION IS THE WEIDKE SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	2	6	1	0	3	14
2	0	16	9	2	4	31
3	1	1	11	8	1	22
4	1	7	5	12	11	31
5	1	5	4	16	553	579
TOTAL	5	32	32	38	574	681

WEIDKE SKILL SCORE 0.54963

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	2	0	0	0	2
2	3	16	7	2	6	34
3	0	11	13	5	9	38
4	0	1	8	17	19	43
5	2	2	6	14	540	564
TOTAL	5	32	32	38	574	681

WEIDKE SKILL SCORE 0.58277

CLIMATOLOGICAL EXPECTANCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	2	6	3	0	3	14
2	0	12	5	0	2	20
3	1	7	14	10	5	37
4	1	2	5	12	11	31
5	1	5	4	16	553	579
TOTAL	5	32	32	38	574	681

WEIDKE SKILL SCORE 0.54465

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	6	4	0	1	12
2	1	6	6	1	4	18
3	0	10	13	6	9	38
4	2	5	6	14	10	37
5	1	5	3	17	550	576
TOTAL	5	32	32	38	574	681

WEIDKE SKILL SCORE 0.55719

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	2	22	17	2	7	45
3	0	2	8	5	2	17
4	2	3	9	22	45	121
5	1	5	3	9	480	496
TOTAL	5	32	32	38	574	681

WEIDKE SKILL SCORE 0.45674

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	2	7	4	1	5	19
2	0	13	6	1	1	21
3	1	5	13	6	5	30
4	1	3	6	14	12	36
5	1	4	3	16	551	575
TOTAL	5	32	32	38	574	681

WEIDKE SKILL SCORE 0.46012

VERIFICATION OF 5 HOUR CEILING FORECASTS
ATLANTIC CITY, N.J. AIRPORT
THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	2	2	9	14
2	1	12	6	5	6	30
3	1	3	5	10	5	24
4	1	4	6	11	9	31
5	2	0	5	25	520	552
TOTAL	5	20	24	53	549	651

HEIDKE SKILL SCORE 0.50665

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	0	0	0	1
2	3	11	8	4	3	29
3	1	8	8	13	10	40
4	0	0	6	18	18	42
5	1	0	2	18	516	539
TOTAL	5	20	24	53	549	651

HEIDKE SKILL SCORE 0.55890

FORE- CAST	CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	1	0	4	6
2	1	9	4	7	3	19
3	1	6	8	15	13	43
4	1	4	6	11	9	31
5	2	0	5	25	520	552
TOTAL	5	20	24	53	549	651

HEIDKE SKILL SCORE 0.50565

FORE- CAST	GROUPING OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	2	2	11	16
2	1	10	7	7	4	29
3	1	5	5	7	7	25
4	1	4	5	13	10	33
5	2	0	5	24	517	548
TOTAL	5	20	24	53	549	651

HEIDKE SKILL SCORE 0.49930

FORE- CAST	LOW CONTINGENCY PROGNOSIS OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	1	13	8	7	15	44
3	2	7	14	27	79	129
4	0	0	1	4	37	42
5	2	0	1	15	418	436
TOTAL	5	20	24	53	549	651

HEIDKE SKILL SCORE 0.31157

FORE- CAST	MULTIPLE DISCRIMINANT ANALYSIS OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	2	2	11	16
2	0	8	2	4	1	15
3	2	8	11	10	6	37
4	1	1	5	14	17	38
5	2	2	4	23	514	545
TOTAL	5	20	24	53	549	651

HEIDKE SKILL SCORE 0.51296

VERIFICATION OF 7 HOUR CEILING FORECASTS
ATLANTIC CITY, N.J. AIRPORT
THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	2	2	10	15
2	1	11	7	3	11	33
3	0	4	5	8	8	25
4	2	2	9	10	11	34
5	5	3	15	28	518	569
TOTAL	8	21	38	51	558	676

HEIDKE SKILL SCORE 0.39952

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	0	1	1	3
2	2	10	12	2	6	33
3	0	8	9	10	10	37
4	0	0	11	17	22	50
5	5	2	5	21	519	553
TOTAL	8	21	38	51	558	676

HEIDKE SKILL SCORE 0.47576

FORE- CAST	CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	2	0	4	7
2	1	8	6	1	5	21
3	0	7	4	7	10	28
4	2	2	11	15	21	51
5	5	3	15	28	518	569
TOTAL	8	21	38	51	558	676

HEIDKE SKILL SCORE 0.40170

FORE- CAST	GROUPING OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	0	2	5	8
2	2	8	7	6	12	35
3	1	6	14	4	7	34
4	0	3	6	11	24	44
5	5	3	11	26	510	555
TOTAL	8	21	38	51	558	676

HEIDKE SKILL SCORE 0.42092

FORE- CAST	CONFIDENCY PROGNOSIS OBSERVED					TOTAL
	1	2	3	4	5	
1	0	2	3	2	55	62
2	1	10	6	3	21	41
3	0	4	7	10	7	28
4	2	5	18	22	76	123
5	5	0	4	14	399	422
TOTAL	8	21	38	51	558	676

HEIDKE SKILL SCORE 0.27203

FORE- CAST	MULTIPLE DISCRIMINANT ANALYSIS OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	2	6	8
2	0	5	4	2	2	13
3	0	6	9	11	7	33
4	3	9	14	15	30	71
5	5	1	11	21	513	551
TOTAL	8	21	38	51	558	676

HEIDKE SKILL SCORE 0.42129

VERIFICATION OF 3 HOUR VISIBILITY FORECASTS
ATLANTIC CITY, N.J. AIRPORT
THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	7	2	2	3	10	24
2	0	8	6	3	9	26
3	1	3	4	3	6	17
4	2	1	0	2	8	13
5	3	3	10	24	579	619
TOTAL	13	17	22	35	612	699

HEIDKE SKILL SCORE 0.35082

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	0	1	4	0	6
2	5	6	4	0	7	22
3	4	3	8	7	19	41
4	2	4	2	7	18	34
5	1	4	6	17	569	596
TOTAL	13	17	22	35	612	699

HEIDKE SKILL SCORE 0.36543

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	7	3	2	3	10	25
2	0	6	3	3	6	18
3	1	4	3	3	8	19
4	1	0	4	1	4	10
5	4	4	10	25	584	627
TOTAL	13	17	22	35	612	699

HEIDKE SKILL SCORE 0.32709

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	7	2	3	3	12	32
2	0	0	0	1	1	2
3	1	8	8	4	6	27
4	1	2	1	2	12	18
5	4	5	10	25	576	620
TOTAL	13	17	22	35	612	699

HEIDKE SKILL SCORE 0.29953

LOW CONFIDENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	6	6	7	6	16	41
2	0	0	0	0	0	0
3	3	8	5	5	12	33
4	3	1	6	14	138	162
5	1	2	4	10	446	463
TOTAL	13	17	22	35	612	699

HEIDKE SKILL SCORE 0.19804

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	8	4	3	5	15	35
2	0	0	0	1	0	1
3	2	6	10	5	15	38
4	0	3	0	3	8	12
5	3	4	9	23	576	613
TOTAL	13	17	22	35	612	699

HEIDKE SKILL SCORE 0.32537

VERIFICATION OF 5 HOUR VISIBILITY FORECASTS
ATLANTIC CITY, N.J. AIRPORT
THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	1	2	19	22
2	1	1	7	2	13	26
3	1	0	1	2	10	16
4	0	0	1	2	10	13
5	4	4	7	14	557	586
TOTAL	6	7	19	22	609	663

HEIDKE SKILL SCORE 0.32687

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	1	1
2	1	1	2	1	2	13
3	1	2	9	5	13	30
4	1	0	4	5	12	22
5	1	2	4	9	581	597
TOTAL	4	7	19	22	609	663

HEIDKE SKILL SCORE 0.52211

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	1	2	19	23
2	1	2	1	2	10	18
3	1	0	6	1	9	19
4	0	0	1	1	7	9
5	4	4	8	14	564	594
TOTAL	6	7	19	22	609	663

HEIDKE SKILL SCORE 0.35126

GROUPING

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	1	2	17	22
2	0	0	4	2	9	15
3	0	0	1	2	13	18
4	2	1	2	2	14	23
5	4	4	7	14	566	595
TOTAL	6	7	19	22	609	663

HEIDKE SKILL SCORE 0.30256

LOW CONFIDENCY PROGNOSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	1	1	5	4	10	21
2	0	0	0	0	0	0
3	1	2	5	2	4	14
4	2	1	1	4	29	37
5	2	1	6	12	566	587
TOTAL	6	7	19	22	607	663

HEIDKE SKILL SCORE 0.32949

MULTIPLE DISCRIMINANT ANALYSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	1	1	7	1	29	41
2	0	0	0	0	1	1
3	0	2	4	4	18	28
4	0	0	1	4	9	14
5	5	4	7	11	562	589
TOTAL	6	7	19	22	609	663

HEIDKE SKILL SCORE 0.32946

VERIFICATION OF 7 HOUR VISIBILITY FORECASTS
ATLANTIC CITY, N.J. AIRPORT
THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	1	0	20	21
2	1	3	5	1	15	25
3	2	1	1	0	12	16
4	0	0	0	0	14	14
5	7	3	12	13	546	581
TOTAL	10	7	19	14	607	657
HEIDKE SKILL SCORE						0.25672

FORE- CAST	SURJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	1	1
2	2	2	1	0	7	12
3	1	2	9	2	13	27
4	1	3	1	2	15	22
5	6	0	8	10	571	595
TOTAL	10	7	19	14	607	657
HEIDKE SKILL SCORE						0.44634

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	1	1	0	8	10
2	0	1	1	1	4	7
3	3	1	3	0	13	20
4	0	1	0	0	7	8
5	7	3	14	13	575	612
TOTAL	10	7	19	14	607	657
HEIDKE SKILL SCORE						0.33605

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	2	2	15	19
2	1	2	2	0	15	20
3	2	2	2	0	19	25
4	1	0	0	0	11	12
5	6	3	13	12	547	581
TOTAL	10	7	19	14	607	657
HEIDKE SKILL SCORE						0.26332

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	2	5	1	31	40
2	0	0	0	0	0	0
3	5	3	11	6	165	190
4	1	1	1	1	28	32
5	3	1	2	6	343	355
TOTAL	10	7	19	14	607	657
HEIDKE SKILL SCORE						0.13267

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	2	3	0	14	20
2	0	0	0	0	0	0
3	1	1	4	0	9	15
4	0	2	4	3	29	38
5	4	2	8	11	555	580
TOTAL	10	7	19	14	607	657
HEIDKE SKILL SCORE						0.13324

VERIFICATION OF 2 HOUR CEILING FORECASTS
WESTOVER AFB, CHICOPEE, MASS.
THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	8	3	0	2	2	15
2	5	8	5	0	0	18
3	0	7	27	7	3	44
4	0	3	6	44	35	88
5	4	3	5	18	455	485
TOTAL	17	24	43	71	495	650

HEIDKE SKILL SCORE 0.63644

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	3	2	0	1	1	7
2	11	10	8	0	1	30
3	0	8	24	9	3	44
4	0	3	7	44	22	76
5	3	1	4	17	468	493
TOTAL	17	24	43	71	495	650

HEIDKE SKILL SCORE 0.65600

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	9	3	0	2	2	16
2	5	11	7	0	0	23
3	0	5	24	4	3	36
4	0	5	6	50	25	86
5	3	0	4	15	465	487
TOTAL	17	24	43	71	495	650

HEIDKE SKILL SCORE 0.69974

GROUPING

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	9	3	0	2	2	16
2	4	10	6	0	0	20
3	1	10	28	8	3	50
4	0	1	6	42	32	81
5	3	0	3	19	458	483
TOTAL	17	24	43	71	495	650

HEIDKE SKILL SCORE 0.65570

LUND CONTINGENCY PROGNOSIS

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	13	11	5	2	2	33
3	0	7	27	7	3	44
4	0	3	6	44	35	88
5	4	3	5	18	455	485
TOTAL	17	24	43	71	495	650

HEIDKE SKILL SCORE 0.61934

MULTIPLE DISCRIMINANT ANALYSIS

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	10	3	0	2	2	17
2	4	15	9	0	0	28
3	0	4	24	6	2	36
4	0	2	4	43	11	60
5	3	0	6	20	480	509
TOTAL	17	24	43	71	495	650

HEIDKE SKILL SCORE 0.57744

VERIFICATION OF 4 HOUR CEILING FORECASTS
WESTOVER AFB, CHICPEE, MASS.
THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					
	1	2	3	4	5	TOTAL
1	3	2	2	2	7	16
2	1	9	7	6	2	25
3	1	5	24	8	10	48
4	1	4	9	36	29	79
5	1	1	9	27	449	487
TOTAL	7	21	51	79	497	655

HEIDKE SKILL SCORE 0.55657

FORE- CAST	SUBJECTIVE OBSERVED					
	1	2	3	4	5	TOTAL
1	1	1	0	0	2	4
2	3	6	4	4	3	20
3	2	10	21	12	3	48
4	0	3	15	39	36	93
5	1	1	11	24	453	490
TOTAL	7	21	51	79	497	655

HEIDKE SKILL SCORE 0.54679

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	3	0	0	2	0	5
2	1	2	0	2	0	5
3	1	12	31	12	12	68
4	1	4	9	36	29	79
5	1	3	11	27	456	498
TOTAL	7	21	51	79	497	655

HEIDKE SKILL SCORE 0.56764

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	3	3	3	3	9	21
2	1	7	6	2	0	16
3	1	5	20	8	8	42
4	1	5	15	37	38	96
5	1	1	7	27	442	480
TOTAL	7	21	51	79	497	655

HEIDKE SKILL SCORE 0.52050

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	4	11	9	8	7	41
3	1	5	24	8	10	48
4	1	5	12	40	67	145
5	1	0	6	23	391	421
TOTAL	7	21	51	79	497	655

HEIDKE SKILL SCORE 0.43556

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	4	2	3	2	4	15
2	1	3	2	1	1	8
3	1	11	30	12	4	58
4	1	4	8	38	25	75
5	1	1	8	26	463	499
TOTAL	7	21	51	79	497	655

HEIDKE SKILL SCORE 0.60256

VERIFICATION OF 6 HOUR CEILING FORECASTS
 WESTOVER AFB, CHICPEE, MASS.
 THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE- CAST	PERSISTENCE					TOTAL
	OBSERVED					
	1	2	3	4	5	
1	0	1	2	4	9	16
2	2	2	7	8	6	25
3	2	5	19	15	6	47
4	1	7	16	31	32	87
5	0	3	5	46	440	494
TOTAL	5	18	49	104	493	669

HEIDKE SKILL SCORE 0.42729

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	0	1	0	1	3
2	2	6	10	1	1	20
3	0	5	20	11	3	39
4	1	3	13	51	39	107
5	1	4	5	41	449	500
TOTAL	5	18	49	104	493	669

HEIDKE SKILL SCORE 0.52922

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	2	4	9	16
2	2	6	7	1	0	16
3	2	7	24	22	12	67
4	1	7	16	31	32	87
5	0	3	6	46	448	505
TOTAL	5	18	49	104	493	669

HEIDKE SKILL SCORE 0.44862

GROUPING

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	3	1	3	8
2	2	2	7	4	9	24
3	0	5	14	13	6	38
4	2	6	18	41	35	102
5	1	4	7	45	440	497
TOTAL	5	18	49	104	493	669

HEIDKE SKILL SCORE 0.43530

LUND CONTINGENCY PROGNOSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	2	1	4	5	4	16
3	3	9	36	32	16	96
4	0	5	5	42	102	154
5	0	3	4	27	371	405
TOTAL	5	18	62	104	493	669

HEIDKE SKILL SCORE 0.38046

MULTIPLE DISCRIMINANT ANALYSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	2	3	4	10
2	2	1	3	4	4	14
3	2	7	27	19	5	60
4	1	5	13	40	26	85
5	0	4	4	38	454	500
TOTAL	5	18	49	104	493	669

HEIDKE SKILL SCORE 0.51471

VERIFICATION OF 2 HOUR VISIBILITY FORECASTS
WESTOVER AFB, CHICOPEE, MASS.
THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	12	2	2	2	0	18
2	2	5	7	1	0	15
3	8	4	20	5	4	41
4	1	1	14	15	14	45
5	1	2	11	27	527	563
TOTAL	24	14	54	50	540	682

HEIDKE SKILL SCORE 0.50696

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	4	2	1	0	0	7
2	10	3	9	0	0	22
3	10	9	32	12	8	71
4	0	0	7	24	26	57
5	0	0	5	14	506	525
TOTAL	24	14	54	50	540	682

HEIDKE SKILL SCORE 0.54223

CLIMATOLOGICAL EFFECTENCY OF PERSISTENCE

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	5	1	2	1	0	9
2	8	4	6	1	0	19
3	9	6	21	6	4	46
4	1	1	14	15	14	45
5	1	2	11	27	522	563
TOTAL	24	14	54	50	540	682

HEIDKE SKILL SCORE 0.47441

GROUPING

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	16	4	4	2	0	26
2	2	2	2	0	0	6
3	5	8	30	17	8	68
4	1	0	11	9	12	33
5	0	0	7	22	520	549
TOTAL	24	14	54	50	540	682

HEIDKE SKILL SCORE 0.54251

LUND CONTINGENCY PROGNOSIS

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	24	14	53	48	141	280
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	0	0	1	2	399	402
TOTAL	24	14	54	50	540	682

HEIDKE SKILL SCORE 0.23284

MULTIPLE DISCRIMINANT ANALYSIS

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	18	4	7	3	0	32
2	3	4	3	0	0	10
3	3	5	31	4	2	45
4	5	1	9	24	15	49
5	0	0	4	19	523	546
TOTAL	24	14	54	50	540	682

HEIDKE SKILL SCORE 0.64662

VERIFICATION OF 4 HOUR VISIBILITY FORECASTS
WESTOVER AFB, CHICOPEE, MASS.
THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	5	2	10	2	4	23
2	1	2	5	0	4	12
3	2	6	22	7	9	46
4	2	2	12	12	16	46
5	2	1	12	22	508	545
TOTAL	12	13	61	43	543	672

HEIDKE SKILL SCORE 0.46366

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	1	1	0	0	5
2	1	1	2	1	4	9
3	4	7	23	7	11	52
4	3	3	23	15	26	70
5	1	1	12	20	502	536
TOTAL	12	13	61	43	543	672

HEIDKE SKILL SCORE 0.36615

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	5	1	2	0	1	9
2	0	2	1	0	2	5
3	3	5	23	6	7	44
4	2	4	23	15	25	69
5	2	1	12	22	508	545
TOTAL	12	13	61	43	543	672

HEIDKE SKILL SCORE 0.44882

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	5	4	12	1	9	31
2	2	0	8	1	1	12
3	3	4	16	7	18	48
4	0	3	10	10	19	42
5	2	2	15	24	496	539
TOTAL	12	13	61	3	543	672

HEIDKE SKILL SCORE 0.43988

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	5	4	15	2	8	35
3	2	6	22	7	9	46
4	3	3	21	32	135	194
5	1	0	3	2	391	397
TOTAL	12	13	61	43	543	672

HEIDKE SKILL SCORE 0.32641

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	4	3	10	2	3	22
2	0	1	0	0	0	1
3	7	7	36	14	21	85
4	1	1	5	10	20	37
5	0	1	10	17	499	527
TOTAL	12	13	61	43	543	672

HEIDKE SKILL SCORE 0.45307

VERIFICATION OF 3 HOUR VISIBILITY FORECASTS
WESTOVER AFB, CHICOPEE, MASS.
THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

PERSISTENCE						
OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	2	2	2	3	14	23
2	1	0	3	2	6	12
3	3	3	14	9	13	42
4	2	4	7	12	17	42
5	1	2	14	31	472	520
TOTAL	9	11	40	57	522	639

HEIDKE SKILL SCORE 0.34121

SUBJECTIVE						
OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	1	1	1	0	0	3
2	0	1	7	2	4	14
3	3	3	11	10	4	31
4	4	5	7	13	23	52
5	1	1	14	32	491	539
TOTAL	9	11	40	57	522	639

HEIDKE SKILL SCORE 0.37730

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE

OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	2	2	2	2	2	10
2	1	0	1	0	3	5
3	4	2	13	11	7	37
4	1	5	10	13	38	67
5	1	2	14	31	472	520
TOTAL	9	11	40	57	522	639

HEIDKE SKILL SCORE 0.33725

GROUPING

OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	2	2	7	2	8	21
2	1	0	0	3	10	14
3	2	4	13	14	25	58
4	2	3	5	9	37	56
5	2	2	15	26	442	490
TOTAL	9	11	40	57	522	639

HEIDKE SKILL SCORE 0.25765

LUND CONTINGENCY PROGNOSIS

OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	2	0	7	4	8	15
3	4	9	20	19	42	94
4	3	2	16	31	184	236
5	0	0	7	4	284	294
TOTAL	9	11	40	57	522	639

HEIDKE SKILL SCORE 0.20137

MULTIPLE DISCRIMINANT ANALYSIS

OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	2	2	2	2	11	19
2	1	0	2	0	7	10
3	5	4	20	14	26	69
4	1	3	6	14	32	56
5	0	2	10	27	446	485
TOTAL	9	11	40	57	522	639

HEIDKE SKILL SCORE 0.19616

VERIFICATION OF 3 HOUR CEILING FORECASTS
WASHINGTON NATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	0	0	0	1	2
2	0	1	3	1	2	7
3	0	0	10	2	0	12
4	0	0	6	13	9	28
5	1	1	3	16	471	492
TOTAL	2	2	22	32	483	541

HEIDKE SKILL SCORE 0.61532

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	0	3	0	2	5
3	0	1	12	9	3	25
4	0	0	4	13	16	33
5	2	1	3	10	462	478
TOTAL	2	2	22	32	483	541

HEIDKE SKILL SCORE 0.57810

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	1	0	3	0	1	5
3	0	1	4	1	2	8
4	0	0	12	15	9	36
5	1	1	3	16	471	492
TOTAL	2	2	22	32	483	541

HEIDKE SKILL SCORE 0.56260

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	0	1	0	2	4
2	0	1	3	1	0	5
3	0	0	2	2	3	14
4	0	0	6	11	6	23
5	1	1	3	18	472	495
TOTAL	2	2	22	32	483	541

HEIDKE SKILL SCORE 0.59032

LUND CONFIDENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	1	1	3	1	3	9
3	0	0	10	2	0	12
4	0	1	6	22	75	106
5	1	0	1	7	405	414
TOTAL	2	2	22	32	483	541

HEIDKE SKILL SCORE 0.42052

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	1	0	1	1	1	4
3	0	2	12	3	3	20
4	0	0	7	12	7	26
5	1	0	2	16	472	491
TOTAL	2	2	22	32	483	541

HEIDKE SKILL SCORE 0.61753

VERIFICATION OF 5 HOUR CEILING FORECASTS
WASHINGTON NATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

PERSISTENCE OBSERVED							SURJECTIVE OBSERVED						
FORE- CAST	1	2	3	4	5	TOTAL	FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	2	2	1	0	0	0	0	0	0
2	0	1	3	2	1	7	2	0	0	3	2	0	5
3	0	0	5	6	2	13	3	0	1	5	7	5	18
4	0	1	5	10	10	27	4	0	1	6	11	21	39
5	0	3	6	14	474	493	5	0	3	1	12	465	481
TOTAL	0	5	14	32	489	544	TOTAL	0	5	14	32	489	544
HEIDKE SKILL SCORE						0.54017	HEIDKE SKILL SCORE						0.53215

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE OBSERVED							GROUPING OBSERVED						
FORE- CAST	1	2	3	4	5	TOTAL	FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0	1	0	0	0	0	0	0
2	0	0	1	1	1	3	2	0	0	0	1	1	2
3	0	1	4	2	2	9	3	0	1	11	11	7	30
4	0	1	9	15	11	36	4	0	1	4	7	14	26
5	0	3	6	14	475	496	5	0	3	3	13	467	486
TOTAL	0	5	14	32	489	544	TOTAL	0	5	14	32	489	544
HEIDKE SKILL SCORE						0.56953	HEIDKE SKILL SCORE						0.52593

1 AND CONTINGENCY PROBABILITIES OBSERVED							MULTIPLE DISCRIMINANT ANALYSIS OBSERVED						
FORE- CAST	1	2	3	4	5	TOTAL	FORE- CAST	1	2	3	4	5	TOTAL
1		0	0		0		1	0	0	0	0	0	0
		1	3	2	3	7	2		1	0	0	2	2
3			5	6	2	13	3	0	1	0	11	2	23
4			9	15	11	36	4		2	0	7	12	27
5			6	14	475	496	5		3	3	13	467	486
TOTAL	0	5	14	32	489	544	TOTAL	0	5	14	32	489	544
HEIDKE SKILL SCORE						0.56953	HEIDKE SKILL SCORE						0.52593

VERIFICATION OF 7 HOUR CEILING FORECASTS
WASHINGTON NATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	3	3
2	0	1	2	1	7	11
3	0	3	4	12	6	25
4	0	2	6	10	17	35
5	1	2	9	22	573	607
TOTAL	1	6	21	45	606	681

HEIDKE SKILL SCORE 0.40856

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	2	3	1	2	8
3	0	3	6	10	7	26
4	0	2	7	15	19	43
5	1	1	5	19	578	604
TOTAL	1	8	21	45	606	681

HEIDKE SKILL SCORE 0.49751

CLIMATOLOGICAL EXPECTANCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	0	1	0	2	3
3	0	3	4	8	9	24
4	0	3	7	15	21	46
5	1	2	9	22	574	608
TOTAL	1	6	21	45	606	681

HEIDKE SKILL SCORE 0.43490

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	6	6
2	0	0	0	0	2	2
3	0	4	7	9	10	30
4	0	1	7	16	21	45
5	1	3	7	20	567	598
TOTAL	1	8	21	45	606	681

HEIDKE SKILL SCORE 0.44539

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	0	0	0	4	4
3	0	4	9	14	3	30
4	0	3	9	23	101	136
5	1	1	3	8	493	511
TOTAL	1	6	21	45	606	681

HEIDKE SKILL SCORE 0.36792

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	0	0	1	3	4
3	0	4	5	11	11	31
4	0	3	11	17	17	48
5	1	1	5	16	575	598
TOTAL	1	8	21	45	606	681

HEIDKE SKILL SCORE 0.47712

VERIFICATION OF 3 HOUR VISIBILITY FORECASTS
WASHINGTON NATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	1	1	2	1	6
2	1	0	1	0	0	2
3	0	1	1	2	3	7
4	0	0	3	5	13	21
5	1	0	7	18	547	573
TOTAL	3	2	13	27	564	609

HEIDKE SKILL SCORE 0.20104

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	0	2	0	2	4
3	2	1	2	4	4	13
4	1	1	2	6	10	20
5	0	0	7	17	548	572
TOTAL	3	2	13	27	564	609

HEIDKE SKILL SCORE 0.23995

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	1	1	2	1	6
2	0	0	0	0	0	0
3	0	0	1	2	1	4
4	1	1	4	5	15	26
5	1	0	7	18	547	573
TOTAL	3	2	13	27	564	609

HEIDKE SKILL SCORE 0.19985

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	1	3	4	8
2	0	0	0	1	1	2
3	2	2	4	3	5	16
4	0	0	1	1	11	13
5	1	0	7	19	543	570
TOTAL	3	2	13	27	564	609

HEIDKE SKILL SCORE 0.14993

2X2 CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	2	2	3	3	4	14
2	0	0	0	0	0	0
3	0	0	1	1	0	2
4	0	0	3	3	10	16
5	2	0	7	18	550	577
TOTAL	2	2	13	27	564	608

HEIDKE SKILL SCORE 0.20301

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	0	1	0	0	2
2	1	1	2	2	5	11
3	0	1	0	1	4	6
4	0	0	3	6	10	19
5	1	0	7	18	545	571
TOTAL	3	2	13	27	564	609

HEIDKE SKILL SCORE 0.23877

VERIFICATION OF 5 HOUR VISIBILITY FORECASTS
WASHINGTON NATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	2	0	4	7
2	0	0	0	0	3	3
3	0	0	1	1	7	9
4	1	0	2	7	12	22
5	2	2	6	17	620	655
TOTAL	3	3	11	25	654	696

HEIDKE SKILL SCORE 0.23630

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	1	0	0	0	4	5
3	0	1	1	3	11	16
4	0	0	2	3	9	14
5	2	2	8	14	630	661
TOTAL	3	3	11	25	654	696

HEIDKE SKILL SCORE 0.15164

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	2	0	2	4
2	0	0	0	0	0	0
3	0	0	0	1	5	6
4	1	1	3	5	11	21
5	2	2	6	19	630	661
TOTAL	3	3	11	25	654	696

HEIDKE SKILL SCORE 0.20594

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	1	2	7	10
2	0	1	1	0	5	7
3	0	0	2	5	14	25
4	0	0	0	1	27	28
5	3	2	7	17	597	626
TOTAL	3	3	11	25	654	696

HEIDKE SKILL SCORE 0.09660

LONG CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	1	1	0	3	5
2	0	0	0	0	0	0
3	0	0	5	5	26	36
4	1	0	2	8	34	45
5	2	2	3	12	593	610
TOTAL	3	3	11	25	654	696

HEIDKE SKILL SCORE 0.23180

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	1	0	0	1	2
2	0	0	1	0	0	1
3	1	0	2	2	6	11
4	0	1	3	7	28	39
5	2	1	3	16	613	637
TOTAL	3	3	11	25	654	696

HEIDKE SKILL SCORE 0.220-1

VERIFICATION OF 7 HOUR VISIBILITY FORECASTS
WASHINGTON NATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	1	0	6	7
2	0	0	1	0	2	3
3	0	1	1	1	6	9
4	0	0	4	4	15	23
5	3	1	5	15	647	671
TOTAL	3	2	12	20	676	713

HEIDKE SKILL SCORE 0.24274

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	2	0	0	0	0
2	1	0	0	0	3	4
3	0	0	2	4	16	22
4	0	0	1	1	8	10
5	2	2	9	15	647	677
TOTAL	3	2	12	20	676	713

HEIDKE SKILL SCORE 0.18816

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	1	0	3	4
2	0	0	0	0	1	1
3	0	1	3	0	5	9
4	0	0	1	1	8	12
5	3	1	7	17	659	687
TOTAL	3	2	12	20	676	713

HEIDKE SKILL SCORE 0.27134

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	1	0	3	4
2	0	0	2	0	5	7
3	0	0	5	6	28	39
4	0	1	1	2	37	41
5	3	1	3	12	603	622
TOTAL	3	2	12	20	676	713

HEIDKE SKILL SCORE 0.17985

LONG CONTINGENCY ANALYSIS

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	1	1
4	0	0	0	0	8	8
5	3	1	12	20	647	703
TOTAL	3	2	12	20	676	713

HEIDKE SKILL SCORE 0.2807

MULTIPLE DISCRIMINANT ANALYSIS

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	2	0	5	8
2	0	0	0	0	4	4
3	0	0	0	1	2	3
4	0	0	6	3	16	25
5	3	1	4	16	647	671
TOTAL	3	2	12	20	676	713

HEIDKE SKILL SCORE 0.2807

VERIFICATION OF 3 HOUR CEILING FORECASTS
 INLEHLD INTERNATIONAL AIRPORT
 THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	9	9	2	1	5	26
2	5	24	6	4	4	43
3	0	13	28	7	10	58
4	0	3	11	33	37	84
5	0	6	10	32	1024	1072
TOTAL	14	55	57	77	1060	1283

HEIDKE SKILL SCORE 0.57681

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	2	0	1	0	1	4
2	8	30	9	2	9	58
3	2	14	24	15	8	63
4	0	5	16	39	35	95
5	2	6	7	21	1027	1063
TOTAL	14	55	57	77	1080	1283

HEIDKE SKILL SCORE 0.59331

CLIMATOLOGICAL EFFICIENCY OF PERSISTENCE
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	5	3	2	0	2	12
2	0	30	6	5	7	57
3	0	13	28	7	10	58
4	0	3	11	33	37	84
5	0	6	10	32	1024	1072
TOTAL	14	55	57	77	1080	1283

HEIDKE SKILL SCORE 0.58166

GROUPING
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	1	4	0	1	0	6
2	12	25	10	4	6	57
3	0	16	29	18	11	74
4	0	4	10	26	42	82
5	1	6	8	28	1021	1064
TOTAL	14	55	57	77	1080	1283

HEIDKE SKILL SCORE 0.54249

LONG CONTINGENCY PROGNOSIS
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	14	33	4	0	7	67
3	0	12	2	1	9	44
4	0	5	27	45	143	260
5	0	5	7	21	1079	1092
TOTAL	14	55	57	77	1100	1243

HEIDKE SKILL SCORE 0.41136

MULTIPLE DISCRIMINANT ANALYSIS
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	5	3	2	0	4	19
2	9	23	8	5	4	49
3	0	15	22	9	7	53
4	0	2	15	31	34	82
5	0	7	10	32	1031	1080
TOTAL	14	55	57	77	1080	1283

HEIDKE SKILL SCORE 0.55438

VERIFICATION OF 5 HOUR CEILING FORECASTS
 IDLEWILD INTERNATIONAL AIRPORT
 THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	6	7	3	0	11	27
2	5	27	11	6	12	61
3	1	12	27	12	22	74
4	1	6	11	41	54	113
5	10	8	18	52	1088	1176
TOTAL	23	60	70	111	1187	1451
HEIDKE SKILL SCORE					0.44072	

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	2	0	0	0	2
2	9	22	10	7	16	64
3	5	18	33	16	17	89
4	0	6	15	45	45	111
5	7	12	12	43	1109	1185
TOTAL	23	60	70	111	1187	1451
HEIDKE SKILL SCORE					0.47463	

FORE-CAST	CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	2	3	0	0	1	6
2	9	25	8	4	17	63
3	1	18	31	12	20	82
4	1	6	13	43	61	124
5	10	8	18	52	1088	1176
TOTAL	23	60	70	111	1187	1451
HEIDKE SKILL SCORE					0.43927	

FORE-CAST	GROUPING OBSERVED					TOTAL
	1	2	3	4	5	
1	7	8	4	0	9	28
2	4	20	5	5	11	45
3	1	10	29	12	17	69
4	0	13	15	45	67	140
5	11	9	17	49	1083	1169
TOTAL	23	60	70	111	1187	1451
HEIDKE SKILL SCORE					0.43503	

FORE-CAST	LUND CONTINGENCY PROGNOSIS OBSERVED					TOTAL
	1	2	3	4	5	
1	0	3	0	0	0	3
2	11	34	12	9	28	94
3	1	10	29	9	24	73
4	2	10	22	64	178	276
5	9	6	7	21	1057	1094
TOTAL	23	60	70	111	1187	1451
HEIDKE SKILL SCORE					0.37949	

FORE-CAST	MULTIPLE DISCRIMINANT ANALYSIS OBSERVED					TOTAL
	1	2	3	4	5	
1	2	5	6	0	2	15
2	8	21	7	5	16	57
3	0	15	24	9	12	60
4	3	9	22	54	61	153
5	10	10	11	39	1096	1166
TOTAL	23	60	70	111	1187	1451
HEIDKE SKILL SCORE					0.40177	

VERIFICATION OF 7 HOUR CEILING FORECASTS
 IDLEWILD INTERNATIONAL AIRPORT
 THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	5	3	2	1	15	27
2	8	20	4	9	20	61
3	1	15	16	18	24	74
4	3	7	17	29	57	113
5	6	16	21	69	1065	1177
TOTAL	24	61	60	126	1181	1452

HEIDKE SKILL SCORE 0.32557

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	2	0	0	0	0	2
2	10	21	5	6	13	55
3	4	20	28	23	21	96
4	2	10	16	44	54	126
5	6	10	11	53	1093	1173
TOTAL	24	61	60	126	1181	1452

HEIDKE SKILL SCORE 0.43830

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	11	14	4	2	26	57
3	4	18	16	16	28	84
4	3	13	19	37	62	134
5	6	16	21	69	1065	1177
TOTAL	24	61	60	126	1181	1452

HEIDKE SKILL SCORE 0.31420

GROUPING

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	2	1	1	0	2	6
2	8	18	6	5	17	54
3	2	7	10	7	8	34
4	4	16	28	42	84	174
5	8	19	15	72	1070	1184
TOTAL	24	61	60	126	1181	1452

HEIDKE SKILL SCORE 0.32682

LUND CONTINGENCY PROGNOSIS

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	13	21	5	7	36	82
3	4	15	13	22	24	84
4	3	10	24	47	97	183
5	4	15	12	68	1020	1079
TOTAL	24	61	60	126	1181	1452

HEIDKE SKILL SCORE 0.34737

MULTIPLE DISCRIMINANT ANALYSIS

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	1	0	0	0	1	2
2	4	10	6	5	14	39
3	5	12	11	6	12	46
4	4	16	27	41	54	142
5	10	23	16	72	1160	1221
TOTAL	24	61	60	126	1181	1452

HEIDKE SKILL SCORE 0.33117

VERIFICATION OF 3 HOUR VISIBILITY FORECASTS
DUWELD INTERNATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	14	4	2	5	6	31
2	3	3	7	0	6	19
3	3	1	7	4	14	29
4	0	6	7	8	24	45
5	5	8	17	31	1151	1212
TOTAL	25	22	40	46	1201	1336

HEIDKE SKILL SCORE 0.29854

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	2	1	0	1	4	8
2	4	9	5	3	6	32
3	6	6	14	3	17	46
4	5	4	13	20	36	78
5	3	2	8	21	1135	1172
TOTAL	25	22	40	46	1201	1336

HEIDKE SKILL SCORE 0.39644

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	14	5	3	5	8	35
2	3	1	2	0	3	9
3	1	2	10	3	10	26
4	2	6	8	9	29	54
5	5	8	17	31	1151	1212
TOTAL	25	22	40	46	1201	1336

HEIDKE SKILL SCORE 0.30717

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	12	4	6	7	19	48
2	0	0	1	1	1	3
3	2	1	8	2	11	24
4	5	7	7	9	29	57
5	6	10	18	29	1141	1204
TOTAL	25	22	40	48	1201	1336

HEIDKE SKILL SCORE 0.26283

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	17	6	8	5	11	47
3	3	1	5	1	4	14
4	5	6	9	10	32	57
5	5	9	14	32	1154	1218
TOTAL	25	22	40	46	1201	1336

HEIDKE SKILL SCORE 0.24234

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	12	2	3	3	6	26
2	1	5	1	0	2	9
3	6	5	6	1	7	25
4	2	4	17	13	43	79
5	4	6	13	31	1143	1197
TOTAL	25	22	40	46	1201	1336

HEIDKE SKILL SCORE 0.22344

VERIFICATION OF 5 HOUR VISIBILITY FORECASTS
 IDLEWILD INTERNATIONAL AIRPORT
 THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

PERSISTENCE
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	10	4	5	2	10	31
2	2	4	1	2	9	20
3	1	3	2	4	20	30
4	2	2	5	4	32	45
5	12	9	14	35	1115	1185
TOTAL	27	22	29	47	1186	1311

HEIDKE SKILL SCORE 0.19227

SUBJECTIVE
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	4	3	9	1	2	19
2	7	5	2	2	11	27
3	5	5	9	9	27	54
4	1	2	4	9	44	60
5	10	7	14	27	1102	1160
TOTAL	27	22	29	47	1186	1311

HEIDKE SKILL SCORE 0.24170

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	10	5	2	1	9	27
2	1	3	1	0	5	10
3	1	2	5	3	11	22
4	3	2	6	5	30	46
5	12	10	15	38	1131	1205
TOTAL	27	22	29	47	1186	1311

HEIDKE SKILL SCORE 0.21060

GROUPING
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	3	4	5	2	18	32
2	3	1	2	3	9	18
3	7	6	7	6	20	46
4	2	3	1	2	14	22
5	12	8	14	34	1125	1193
TOTAL	27	22	29	47	1186	1311

HEIDKE SKILL SCORE 0.18013

LUND CONTINGENCY PROGNOSIS
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	10	7	5	3	16	41
3	4	5	7	8	82	106
4	3	7	3	5	114	135
5	10	3	11	28	974	1026
TOTAL	27	22	29	47	1186	1311

HEIDKE SKILL SCORE 0.12372

MULTIPLE DISCRIMINANT ANALYSIS
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	7	3	1	1	4	16
2	1	4	2	2	5	14
3	8	5	6	6	37	60
4	1	5	5	7	17	35
5	10	5	15	33	1123	1166
TOTAL	27	22	29	47	1186	1311

HEIDKE SKILL SCORE 0.24398

VERIFICATION OF 7 HOUR VISIBILITY FORECASTS
 DULLETT INTERNATIONAL AIRPORT
 THE VERIFICATION CRITERION IS THE WEIDKE SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	10	0	4	2	15	31
2	3	1	5	1	10	20
3	2	3	3	1	22	31
4	1	2	4	2	36	45
5	15	12	26	44	1114	1211
TOTAL	31	18	42	50	1197	1338

WEIDKE SKILL SCORE 0.05471

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	2	1	1	1	0	4
2	7	4	5	1	11	28
3	10	8	13	10	28	69
4	2	2	8	7	45	64
5	10	3	15	32	1113	1173
TOTAL	31	18	42	50	1197	1338

WEIDKE SKILL SCORE 0.21829

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	6	0	5	1	10	22
2	2	2	3	1	9	17
3	7	2	4	2	20	43
4	0	0	2	0	17	19
5	16	14	28	46	1133	1237
TOTAL	31	18	42	50	1197	1338

WEIDKE SKILL SCORE 0.02397

GROUPING
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	8	6	9	3	36	62
2	2	1	2	5	12	22
3	4	3	2	3	40	52
4	5	0	2	2	38	47
5	12	8	27	37	1071	1155
TOTAL	31	18	42	50	1197	1338

WEIDKE SKILL SCORE 0.06451

LONG CONTINGENCY ANALYSIS
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	1	0	1
2	0	0	0	0	0	0
3	10	5	11	8	49	83
4	1	1	3	5	35	45
5	2	12	28	72	1114	1211
TOTAL	31	18	42	50	1197	1338

WEIDKE SKILL SCORE 0.00000

MULTIPLE DISCRIMINANT ANALYSIS
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	10	3	7	2	7	29
2	0	1	4	3	29	37
3	1	1	2	1	5	10
4	5	7	8	7	60	87
5	14	6	21	75	1296	1372
TOTAL	31	18	42	50	1197	1338

WEIDKE SKILL SCORE 0.11111

VERIFICATION OF 2 HOUR CEILING FORECASTS
OFFUTT AFB, OMAHA, NEBRASKA
THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	1	1	0	0	3
2	0	21	2	4	1	28
3	0	2	9	1	2	14
4	0	3	2	60	26	91
5	0	4	2	20	532	558
TOTAL	1	31	16	85	561	694

HEIDKE SKILL SCORE 0.71164

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	1	8	9
2	0	21	3	2	4	30
3	0	5	7	5	3	22
4	0	2	2	54	29	87
5	1	3	2	23	517	546
TOTAL	1	31	16	85	561	694

HEIDKE SKILL SCORE 0.63626

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	1	0	1
2	1	22	3	3	1	30
3	0	2	9	1	2	14
4	0	3	2	60	26	91
5	0	4	2	20	532	558
TOTAL	1	31	16	85	561	694

HEIDKE SKILL SCORE 0.71155

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	1	1	0	0	3
2	0	21	2	5	1	29
3	0	2	7	0	2	11
4	0	3	2	60	26	91
5	0	4	2	20	532	558
TOTAL	1	31	16	85	561	694

HEIDKE SKILL SCORE 0.71163

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	1	22	3	4	1	31
3	0	2	9	1	2	14
4	0	4	1	20	11	26
5	0	4	1	11	447	463
TOTAL	1	31	16	35	561	694

HEIDKE SKILL SCORE 0.52000

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	1	1	0	0	3
2	0	20	1	4	2	27
3	0	2	7	1	1	11
4	0	4	1	54	14	73
5	0	4	2	24	544	574
TOTAL	1	31	16	85	561	694

HEIDKE SKILL SCORE 0.71000

VERIFICATION OF 4 HOUR CEILING FORECASTS
OFFUTT AFB, OMAHA, NEBRASKA
THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	0	0	1	2	4
2	2	11	6	3	5	27
3	0	3	6	4	2	15
4	0	4	3	33	35	75
5	0	6	4	23	494	531
TOTAL	3	24	23	64	538	652

HEIDKE SKILL SCORE 0.52942

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	2	1	1	4	9
2	0	9	7	3	5	24
3	1	8	6	6	5	28
4	1	1	4	36	29	71
5	0	4	5	16	495	520
TOTAL	3	24	23	64	538	652

HEIDKE SKILL SCORE 0.55533

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	1	0	0	0	1
2	3	12	7	5	8	31
3	0	0	1	1	0	2
4	0	5	7	35	36	43
5	0	0	4	23	494	531
TOTAL	3	24	23	64	538	652

HEIDKE SKILL SCORE 0.51411

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	2	1	1	2	2	8
2	0	4	2	2	0	8
3	0	0	2	1	1	4
4	1	12	9	31	39	92
5	0	7	7	28	496	540
TOTAL	3	24	23	64	538	652

HEIDKE SKILL SCORE 0.46656

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	3	11	6	4	7	31
3	0	3	4	4	0	11
4	0	8	7	46	85	152
5	0	2	4	10	542	458
TOTAL	3	24	23	64	538	652

HEIDKE SKILL SCORE 0.45570

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	0	0	0	2	3
2	2	10	5	3	3	23
3	0	2	3	3	2	10
4	0	8	8	35	77	78
5	0	4	7	23	501	538
TOTAL	3	24	23	64	538	652

HEIDKE SKILL SCORE 0.55385

VERIFICATION OF 6 HOUR CEILING FORECASTS
OFFUTT AFB, OMAHA, NEBRASKA
THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	0	0	1	1	3
2	1	7	6	3	9	26
3	0	2	4	4	4	14
4	0	4	1	35	38	80
5	1	3	6	33	499	541
TOTAL	2	16	19	76	551	664

HEIDKE SKILL SCORE 0.48925

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	2	0	1	6	9
2	1	5	5	5	5	21
3	0	2	6	9	5	22
4	1	3	3	36	38	81
5	0	4	5	25	497	531
TOTAL	2	16	19	76	551	664

HEIDKE SKILL SCORE 0.49705

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	1	0	0	0	1
2	2	6	6	5	12	31
3	0	0	0	0	0	0
4	0	6	7	38	40	91
5	0	3	6	33	499	541
TOTAL	2	16	19	76	551	664

HEIDKE SKILL SCORE 0.47347

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	2	1	0	2	1	6
2	0	0	0	0	0	0
3	0	6	9	3	12	30
4	0	1	1	4	1	7
5	0	6	4	67	537	614
TOTAL	2	16	19	76	551	664

HEIDKE SKILL SCORE 0.38059

2X2X2 CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	2	4	4	4	9	23
3	0	0	1	2	2	5
4	0	10	10	53	106	179
5	0	3	4	17	434	457
TOTAL	2	16	19	76	551	664

HEIDKE SKILL SCORE 0.39324

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	1	1	2
2	2	8	8	6	5	29
3	0	0	0	3	2	5
4	0	5	6	34	22	67
5	0	3	5	32	521	561
TOTAL	2	16	19	76	551	664

HEIDKE SKILL SCORE 0.51543

VERIFICATION OF 2 HOUR VISIBILITY FORECASTS
OFFUTT AFB, OMAHA, NEBRASKA
THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	3	0	0	0	0	3
2	0	4	0	1	3	8
3	0	3	6	4	4	17
4	0	0	9	6	8	23
5	2	1	7	10	624	644
TOTAL	5	8	21	21	639	694

HEIDKE SKILL SCORE 0.47924

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	3	0	0	0	1	4
2	0	0	0	1	0	1
3	0	5	5	5	6	21
4	0	3	7	8	14	32
5	2	1	7	7	618	636
TOTAL	5	8	21	21	636	694

HEIDKE SKILL SCORE 0.42825

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	3	0	0	0	0	3
2	0	0	0	0	0	0
3	0	7	6	5	7	25
4	0	0	8	6	8	22
5	2	1	7	10	624	644
TOTAL	5	8	21	21	639	694

HEIDKE SKILL SCORE 0.43761

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	3	0	0	0	0	3
2	0	1	0	0	0	1
3	0	5	6	5	6	22
4	0	1	7	5	7	20
5	2	1	8	11	626	648
TOTAL	5	8	21	21	639	694

HEIDKE SKILL SCORE 0.43760

LOGO CONTINGENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0

HEIDKE SKILL SCORE 0.43761

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	3	0	0	0	1	4
2	0	0	0	0	0	0
3	0	7	6	4	6	23
4	0	0	3	3	4	10
5	2	1	12	14	628	657
TOTAL	5	8	21	21	639	694

HEIDKE SKILL SCORE 0.43761

VERIFICATION OF 4 HOUR VISIBILITY FORECASTS
OFFUTT AFB, OMAHA, NEBRASKA
THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	3	0	0	0	0	3
2	1	1	0	0	4	6
3	0	1	7	6	4	18
4	0	1	4	5	12	22
5	0	2	7	14	616	644
TOTAL	4	5	14	30	636	693

HEIDKE SKILL SCORE 0.37066

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	2	0	0	0	0	2
2	1	0	2	0	0	3
3	1	1	3	5	11	21
4	0	4	4	6	16	30
5	0	0	9	19	609	637
TOTAL	4	5	18	30	636	693

HEIDKE SKILL SCORE 0.29182

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	3	0	0	0	0	3
2	0	0	0	0	0	0
3	1	2	7	6	8	24
4	0	1	3	4	11	19
5	0	2	8	20	617	647
TOTAL	4	5	14	30	636	693

HEIDKE SKILL SCORE 0.34150

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	2	0	0	0	2	4
2	0	0	0	0	0	0
3	2	2	5	6	6	22
4	0	1	3	3	11	18
5	0	2	5	21	617	649
TOTAL	4	5	18	30	636	693

HEIDKE SKILL SCORE 0.29843

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	2	0	0	0	3	5
3	2	2	7	6	4	21
4	0	1	5	9	25	41
5	0	2	6	15	603	626
TOTAL	4	5	18	30	636	693

HEIDKE SKILL SCORE 0.34437

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	3	0	0	0	1	4
2	0	1	0	0	3	4
3	0	3	1	3	1	5
4	1	2	10	1	11	26
5	0	2	7	25	620	654
TOTAL	4	5	18	30	636	693

HEIDKE SKILL SCORE 0.24929

VERIFICATION OF 6 HOUR VISIBILITY FORECASTS
OFFUTT AFB, OMAHA, NEBRASKA
THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	3	0	0	0	0	3
2	0	0	1	0	6	7
3	0	2	3	5	3	13
4	0	0	2	3	15	20
5	0	0	8	15	552	575
TOTAL	3	2	14	23	576	618

HEIDKE SKILL SCORE 0.33602

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	0	2	0	0	2
3	3	0	0	5	5	13
4	0	1	1	4	12	18
5	0	1	11	14	559	585
TOTAL	3	2	14	23	576	618

HEIDKE SKILL SCORE 0.28334

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	3	0	0	0	0	3
2	0	0	0	0	0	0
3	0	2	3	5	7	17
4	0	0	1	3	13	17
5	0	0	10	15	556	581
TOTAL	3	2	14	23	576	618

HEIDKE SKILL SCORE 0.34050

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	3	0	1	2	2	8
2	0	0	0	0	4	4
3	0	1	3	7	17	28
4	0	0	2	2	9	13
5	0	1	8	12	544	565
TOTAL	3	2	14	23	576	618

HEIDKE SKILL SCORE 0.30460

LOW CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	1	2	4	5	9	21
4	0	0	3	10	57	70
5	0	0	7	15	510	532
TOTAL	1	2	14	25	576	618

HEIDKE SKILL SCORE 0.27771

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	0	0	0	1	2
2	0	0	0	1	0	1
3	2	1	3	2	4	12
4	0	1	4	4	17	26
5	0	0	7	16	554	577
TOTAL	3	2	14	23	576	618

HEIDKE SKILL SCORE 0.3124

VERIFICATION OF 2 HOUR CEILING FORECASTS
 RANDOLPH AFB, SAN ANTONIO, TEXAS
 THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE-CAST	PERSISTENT OBSERVED					TOTAL
	1	2	3	4	5	
1	4	2	4	1	0	11
2	0	4	7	2	1	14
3	0	6	74	27	16	123
4	0	0	14	52	18	84
5	0	2	14	19	425	460
TOTAL	4	14	113	101	460	692

HEIDKE SKILL SCORE 0.61901

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	1	2	1	1	6
2	2	6	6	2	0	16
3	1	6	75	28	16	126
4	0	1	19	48	27	95
5	0	0	11	22	416	449
TOTAL	4	14	113	101	460	692

HEIDKE SKILL SCORE 0.58829

CLIMATOLOGICAL EXPECTANCY OF PERSISTENCE

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	4	2	4	1	0	11
2	0	2	6		1	10
3	0	8	75	28	16	127
4	0	0	14	52	18	84
5	0	2	14	19	425	460
TOTAL	4	14	113	101	460	692

HEIDKE SKILL SCORE 0.61566

GROUPING

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	3	4	4	1	0	12
2	0	1	3	1	0	5
3	1	6	76	25	17	125
4	0	2	19	56	28	103
5	0	1	11	18	417	447
TOTAL	4	14	113	101	460	692

HEIDKE SKILL SCORE 0.60854

LUND CONTINGENCY PROGNOSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	4	4	9	2	1	20
3	0	8	74	26	15	123
4	0	0	14	54	32	102
5	0	2	14	19	412	447
TOTAL	4	14	113	101	460	692

HEIDKE SKILL SCORE 0.58351

MULTIPLE DISCRIMINANT ANALYSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	4	3	5	1	0	13
2	0	2	3	1	0	6
3	0	7	85	36	22	150
4	0	0	13	46	19	78
5	0	2	7	17	419	445
TOTAL	4	14	113	101	460	692

HEIDKE SKILL SCORE 0.61881

VERIFICATION OF 4 HOUR CEILING FORECASTS
 RANDOLPH AFB, SAN ANTONIO, TEXAS
 THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	4	4	2	1	11
2	0	2	9	0	2	13
3	0	3	39	29	49	120
4	0	1	11	40	26	78
5	0	0	18	35	405	458
TOTAL	0	10	81	106	483	680

HEIDKE SKILL SCORE 0.42901

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	2	5	1	0	8
3	0	6	45	24	7	82
4	0	1	19	48	47	115
5	0	1	12	33	429	475
TOTAL	0	10	81	106	483	680

HEIDKE SKILL SCORE 0.52439

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	1	2	1	1	5
2	0	0	2	0	0	2
3	0	7	32	19	23	81
4	0	2	27	51	54	134
5	0	0	18	35	405	458
TOTAL	0	10	81	106	483	680

HEIDKE SKILL SCORE 0.43024

GROUPING
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	4	3	2	3	12
2	0	2	5	1	2	9
3	0	4	44	28	49	125
4	0	1	15	41	44	101
5	0	0	14	34	385	433
TOTAL	0	10	81	106	483	680

HEIDKE SKILL SCORE 0.40767

LUND CONTINGENCY PROGNOSIS
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	6	8	2	1	17
3	0	3	42	24	40	109
4	0	1	16	51	62	130
5	0	0	15	29	380	424
TOTAL	0	10	61	106	483	680

HEIDKE SKILL SCORE 0.43673

MULTIPLE DISCRIMINANT ANALYSIS
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	5	4	1	0	10
2	0	0	0	0	0	0
3	0	4	51	34	49	142
4	0	1	11	41	36	93
5	0	0	15	24	398	437
TOTAL	0	10	81	106	483	680

HEIDKE SKILL SCORE 0.43673

VERIFICATION OF 6 HOUR CEILING FORECASTS
 RANDOLPH AFB, SAN ANTONIO, TEXAS
 THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

PERSISTENCE OBSERVED						
FORE- CAST	1	2	3	4	5	TOTAL
1	0	1	3	5	2	11
2	0	1	6	3	3	13
3	2	6	29	23	59	119
4	0	2	18	28	30	78
5	1	3	24	40	389	457
TOTAL	3	13	80	99	483	678

HEIDKE SKILL SCORE 0.31772

SUBJECTIVE OBSERVED						
FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	1	0	1
2	1	2	6	1	0	10
3	1	7	48	21	26	103
4	0	1	19	38	38	96
5	1	3	7	38	419	468
TOTAL	3	13	80	99	483	678

HEIDKE SKILL SCORE 0.48299

CLIMATOLOGICAL EXPECTANCY OF PERSISTENCE
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	2	2	1	5
2	0	0	2	0	0	2
3	2	8	22	18	31	81
4	0	0	26	17	58	121
5	1	5	28	42	393	469
TOTAL	3	13	80	99	483	678

HEIDKE SKILL SCORE 0.31389

GROUPING
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	1	1	3	3	8
2	0	1	4	3	1	9
3	1	3	31	23	37	95
4	1	5	15	31	68	120
5	1	3	29	39	374	446
TOTAL	3	13	80	99	483	678

HEIDKE SKILL SCORE 0.29775

LONG CONTINGENCY PROGNOSIS
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	2	6	17	12	16	53
3	1	1	2	4	17	25
4	0	3	37	50	91	181
5	1	3	22	33	359	417
TOTAL	3	13	80	99	483	678

HEIDKE SKILL SCORE 0.27940

MULTIPLE DISCRIMINANT ANALYSIS
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	1	2	3	0	6
2	0	0	2	0	0	2
3	2	9	43	30	28	112
4	0	0	13	28	60	101
5	1	3	27	38	395	457
TOTAL	3	13	80	99	483	678

HEIDKE SKILL SCORE 0.16346

VERIFICATION OF 2 HOUR VISIBILITY FORECASTS
 RANDOLPH AFB, SAN ANTONIO, TEXAS
 THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE-CAST	PERSISTENCE					TOTAL
	OBSERVED					
	1	2	3	4	5	
1	4	0	3	1	4	12
2	1	1	2	1	0	5
3	3	0	7	3	5	18
4	0	1	6	4	7	18
5	1	2	5	15	626	649
TOTAL	9	4	23	24	642	702

HEIDKE SKILL SCORE 0.37515

FORE-CAST	SURJECTIVE					TOTAL
	OBSERVED					
	1	2	3	4	5	
1	1	1	2	0	0	4
2	2	0	1	0	2	5
3	4	0	8	6	7	25
4	0	1	8	6	13	23
5	2	2	4	12	620	640
TOTAL	9	4	23	24	642	702

HEIDKE SKILL SCORE 0.35620

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	4	0	3	1	4	12
2	0	0	0	0	0	0
3	4	0	9	3	5	21
4	0	1	4	2	5	12
5	1	3	7	18	620	651
TOTAL	9	4	23	24	642	702

HEIDKE SKILL SCORE 0.33470

GROUPING

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	3	0	2	1	3	9
2	1	0	4	3	3	11
3	3	1	10	3	6	23
4	1	1	2	2	4	10
5	1	2	5	15	626	649
TOTAL	9	4	23	24	642	702

HEIDKE SKILL SCORE 0.36516

LUND CONTINGENCY PROGNOSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	5	1	5	2	4	17
2	0	0	0	0	0	0
3	3	0	7	4	6	20
4	0	3	10	14	95	122
5	1	3	1	4	537	543
TOTAL	9	4	23	24	642	702

HEIDKE SKILL SCORE 0.27655

MULTIPLE DISCRIMINANT ANALYSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	2	0	2	1	0	5
2	1	0	0	0	1	2
3	3	1	12	4	6	26
4	2	0	3		3	12
5	1	3	6	15	627	655
TOTAL	9	4	23	24	642	702

HEIDKE SKILL SCORE 0.44555

VERIFICATION OF 4 HOUR VISIBILITY FORECASTS
 RANDOLPH AFB, SAN ANTONIO, TEXAS
 THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE-CAST	PERSISTENCE					TOTAL
	OBSERVED					
	1	2	3	4	5	
1	1	0	2	1	0	12
2	0	0	2	0	3	5
3	0	0	4	3	8	15
4	0	0	4	2	12	18
5	0	0	7	8	617	632
TOTAL	1	0	19	14	648	682

HEIDKE SKILL SCORE 0.36917

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	0	0	0	1	1
3	0	0	7	4	5	16
4	0	0	4	3	13	20
5	1	0	0	7	629	645
TOTAL	1	0	19	14	648	682

HEIDKE SKILL SCORE 0.46186

CLIMATOLOGICAL EXPECTANCY OF PERSISTENCE
 OBSERVED

FORE-CAST	2	3	4	5	TOTAL
1	0	0	1	1	2
2	0	0	0	0	0
3	0	0	4	2	13
4	0	0	1	3	5
5	1	0	7	8	630
TOTAL	1	0	19	14	648

HEIDKE SKILL SCORE 0.46931

GROUPING
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	1	0	3	1	6	11
2	0	0	2	0	4	6
3	0	0	4	4	17	25
4	0	0	1	1	12	14
5	0	0	9	8	609	626
TOTAL	1	0	19	14	648	682

HEIDKE SKILL SCORE 0.31204

LUND CONTINGENCY PROGNOSIS
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	1	0	5	6
2	0	0	0	0	0	0
3	1	0	5	4	14	24
4	0	0	10	9	130	149
5	0	0	1	1	499	501
TOTAL	1	0	19	14	648	682

HEIDKE SKILL SCORE 0.19751

MULTIPLE DISCRIMINANT ANALYSIS
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	1	0	3	0	1	5
2	0	0	0	0	0	0
3	0	0	6	5	21	32
4	0	0	5	5	16	26
5	0	0	5	4	610	619
TOTAL	1	0	19	14	648	682

HEIDKE SKILL SCORE 0.42054

VERIFICATION OF 6 HOUR VISIBILITY FORECASTS
 RANDOLPH AFB, SAN ANTONIO, TEXAS
 THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	2	3	7	12
2	0	0	2	0	3	5
3	0	1	0	1	11	15
4	0	0	0	2	16	18
5	1	1	10	10	610	632
TOTAL	1	2	14	16	649	682

HEIDKE SKILL SCORE 0.23888

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	1	1
2	0	0	0	0	1	1
3	1	0	4	5	7	17
4	0	1	1	1	11	16
5	0	1	2	10	627	647
TOTAL	1	2	14	16	649	682

HEIDKE SKILL SCORE 0.36008

CLIMATOLOGICAL EXPECTANCY OF PERSISTENCE
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	1	0	1
2	0	0	1	0	0	0
3	0	1	2	2	19	24
4	0	0	0	1	3	4
5	1	1	12	12	627	653
TOTAL	1	2	14	16	649	682

HEIDKE SKILL SCORE 0.28453

GROUPING
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	1	2	2	18	23
2	0	0	2	1	11	14
3	0	0	3	6	23	32
4	0	0	2	0	4	6
5	1	1	5	7	593	607
TOTAL	1	2	14	16	649	682

HEIDKE SKILL SCORE 0.25178

LONG CONTINGENCY PROGNOSIS
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	0	3	1	2	6
3	0	1	7	4	130	142
4	1	0	1	3	38	42
5	0	1	4	8	627	642
TOTAL	1	2	14	16	649	682

HEIDKE SKILL SCORE 0.11777

MULTIPLE DISCRIMINANT ANALYSIS
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	2	2	2	6
2	0	0	0	1	1	2
3	0	1	4	3	11	19
4	1	0	1	2	17	21
5	0	1	5	2	618	626
TOTAL	1	2	14	16	649	682

HEIDKE SKILL SCORE 0.10777

VERIFICATION OF 2 HOUR CEILING FORECASTS
MCGUIRE AFB, WRIGHTSTOWN, N.J.
THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

PERSISTENCE						
OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	8	3	1	0	1	13
2	3	13	3	2	0	21
3	0	5	22	6	3	36
4	0	1	9	29	25	64
5	3	1	4	29	440	477
TOTAL	14	23	39	66	469	611

HEIDKE SKILL SCORE 0.61177

SUBJECTIVE						
OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	5	1	1	0	4	11
2	3	10	5	0	2	20
3	2	11	16	8	6	43
4	0	1	13	33	23	70
5	4	0	4	25	434	467
TOTAL	14	23	39	66	459	611

HEIDKE SKILL SCORE 0.56679

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	8	3	1	0	1	13
2	2	8	2	1	0	13
3	1	10	23	7	3	44
4	0	1	9	29	25	64
5	3	1	4	29	440	477
TOTAL	14	23	39	66	469	611

HEIDKE SKILL SCORE 0.99549

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	8	4	1	0	1	14
2	3	11	3	1	0	18
3	0	6	27	9	3	45
4	0	1	5	33	28	67
5	3	1	3	23	437	467
TOTAL	14	23	39	66	469	611

HEIDKE SKILL SCORE 0.69617

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	11	17	4	2	1	35
3	0	4	24	11	7	46
4	0	0	6	19	7	32
5	3	2	5	34	454	498
TOTAL	14	23	39	66	469	611

HEIDKE SKILL SCORE 0.60121

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	9	3	1	1	2	16
2	2	12	3	1	0	18
3	1	6	25	5	2	39
4	0	1	7	32	18	58
5	2	1	3	27	447	480
TOTAL	14	23	39	66	469	611

HEIDKE SKILL SCORE 0.66072

VERIFICATION OF 4 HOUR CEILING FORECASTS
MCGUIRE AFB, WRIGHTSTOWN, N.J.
THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

PERSISTENCE						
OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	0	4	2	0	3	9
2	0	8	7	2	1	18
3	1	7	16	4	4	27
4	0	5	6	16	29	56
5	"	1	7	27	374	409
TOTAL	1	20	38	49	411	519

HEIDKE SKILL SCORE 0.50920

SUBJECTIVE						
OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	0	3	0	0	2	5
2	1	4	4	1	1	11
3	0	7	14	9	5	35
4	0	2	9	23	28	62
5	0	4	11	16	375	406
TOTAL	1	20	38	49	411	519

HEIDKE SKILL SCORE 0.52076

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE						
OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	0	1	0	0	1	2
2	0	3	5	0	3	16
3	1	5	20	6	4	36
4	0	5	6	16	29	56
5	0	1	7	27	374	409
TOTAL	1	20	38	49	411	519

HEIDKE SKILL SCORE 0.52669

GROUPING						
OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	0	4	3	0	3	10
2	0	8	5	1	2	16
3	1	2	15	5	2	25
4	0	5	8	18	29	60
5	0	1	7	25	375	408
TOTAL	1	20	38	49	411	519

HEIDKE SKILL SCORE 0.51942

LUND CONTINGENCY PROGNOSIS						
OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	7	9	4	6	26
3	1	8	18	8	3	34
4	0	4	7	29	85	125
5	0	1	4	8	317	330
TOTAL	1	20	38	49	411	519

HEIDKE SKILL SCORE 0.43100

MULTIPLE DISCRIMINANT ANALYSIS						
OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	0	3	2	0	2	7
2	0	2	1	0	1	4
3	1	11	23	12	5	52
4	0	2	5	19	14	40
5	0	2	7	16	389	416
TOTAL	1	20	38	49	411	519

HEIDKE SKILL SCORE 0.54965

VERIFICATION OF 6 HOUR WEILING FORECASTS
 MCQUIRE AFH, WRIGHTSTOWN, N.J.
 THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	3	0	6	9
2	2	2	6	6	2	18
3	1	6	8	7	6	28
4	1	5	9	18	23	56
5	1	2	5	32	368	408
TOTAL	5	15	31	63	405	519

HEIDKE SKILL SCORE 0.42667

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	1	1	3	6
2	1	4	4	0	4	13
3	1	4	12	9	6	32
4	2	3	6	31	26	68
5	1	3	8	22	366	400
TOTAL	5	15	31	63	405	519

HEIDKE SKILL SCORE 0.51495

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	1	0	1	2
2	2	1	1	2	0	6
3	1	7	15	11	13	47
4	1	5	9	18	23	56
5	1	2	5	12	368	408
TOTAL	5	15	31	63	405	519

HEIDKE SKILL SCORE 0.45204

GROUPING
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	2	0	3	5
2	2	1	2	2	1	9
3	0	2	6	3	10	21
4	1	6	12	30	55	104
5	2	6	9	27	336	380
TOTAL	5	15	31	63	405	519

HEIDKE SKILL SCORE 0.36249

LUND CONTINGENCY PROGNOSIS
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	2	4	9	56	71
2	0	0	2	1	5	8
3	2	9	14	15	9	49
4	1	1	8	17	38	65
5	2	3	3	21	297	326
TOTAL	5	15	31	63	405	519

HEIDKE SKILL SCORE 0.29167

MULTIPLE DISCRIMINANT ANALYSIS
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	0	1	1	2	5
2	0	2	2	0	3	7
3	2	8	15	9	3	37
4	1	1	8	25	23	60
5	1	2	5	28	374	410
TOTAL	5	15	31	63	405	519

HEIDKE SKILL SCORE 0.51749

VERIFICATION OF 2 HOUR VISIBILITY FORECASTS
MCGUIRE AFB, WRIGHTSTOWN, N.J.
THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	11	5	0	0	0	16
2	2	6	6	1	0	15
3	1	4	37	10	6	58
4	0	0	22	21	11	54
5	0	1	15	22	431	469
TOTAL	14	16	80	54	448	612

HEIDKE SKILL SCORE 0.55871

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	6	5	3	0	0	14
2	3	2	7	1	2	15
3	2	7	41	14	9	73
4	2	0	20	25	31	78
5	1	2	9	14	406	432
TOTAL	14	16	80	54	448	612

HEIDKE SKILL SCORE 0.50201

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	11	5	0	0	0	16
2	0	4	2	1	0	7
3	3	6	41	10	6	66
4	0	0	22	21	11	54
5	0	1	15	22	431	469
TOTAL	14	16	80	54	448	612

HEIDKE SKILL SCORE 0.56610

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	12	7	4	0	0	23
2	1	1	1	0	0	3
3	0	6	32	15	9	62
4	1	1	32	19	8	61
5	0	1	11	20	431	463
TOTAL	14	16	80	54	448	612

HEIDKE SKILL SCORE 0.52036

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	12	9	2	0	0	23
3	2	6	40	15	13	76
4	0	0	23	18	18	59
5	0	1	15	21	417	454
TOTAL	14	16	80	54	448	612

HEIDKE SKILL SCORE 0.48761

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	12	9	7	0	0	28
2	1	1	1	0	0	3
3	1	5	43	14	8	71
4	0	1	20	25	20	66
5	0	0	9	15	420	444
TOTAL	14	16	80	54	448	612

HEIDKE SKILL SCORE 0.56815

VERIFICATION OF 4 HOUR VISIBILITY FORECASTS
MCGUIRE AFB, WRIGHTSTOWN, N.J.
THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					
	1	2	3	4	5	TOTAL
1	1	1	7	2	1	12
2	1	3	4	3	2	13
3	0	0	19	14	14	47
4	1	0	13	11	23	48
5	0	3	9	27	355	394
TOTAL	3	7	52	57	395	514

HEIDKE SKILL SCORE 0.37989

FORE- CAST	SUBJECTIVE OBSERVED					
	1	2	3	4	5	TOTAL
1	1	1	1	1	1	5
2	0	0	4	1	3	8
3	1	2	18	8	9	38
4	1	1	20	18	34	74
5	0	3	9	29	348	389
TOTAL	3	7	52	57	395	514

HEIDKE SKILL SCORE 0.36764

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE

FORE- CAST	OBSERVED					
	1	2	3	4	5	TOTAL
1	0	0	2	0	1	3
2	0	0	0	0	0	0
3	2	4	28	19	16	69
4	1	0	13	11	23	48
5	0	3	9	27	355	394
TOTAL	3	7	52	57	395	514

HEIDKE SKILL SCORE 0.40038

GROUPING

FORE- CAST	OBSERVED					
	1	2	3	4	5	TOTAL
1	1	2	8	2	1	14
2	1	0	1	0	3	5
3	1	2	18	14	13	48
4	0	0	10	10	13	33
5	0	3	15	31	365	414
TOTAL	3	7	52	57	395	514

HEIDKE SKILL SCORE 0.36067

LAND CONTINGENCY PROGNOSIS

FORE- CAST	OBSERVED					
	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	1	1	7	2	1	12
3	1	3	20	20	26	70
4	1	0	19	15	27	62
5	0	3	6	20	341	370
TOTAL	3	7	52	57	395	514

HEIDKE SKILL SCORE 0.36645

MULTIPLE DISCRIMINANT ANALYSIS

FORE- CAST	OBSERVED					
	1	2	3	4	5	TOTAL
1	2	4	7	3	1	17
2	0	0	0	0	0	0
3	1	0	28	24	19	72
4	0	0	10	12	23	45
5	0	3	7	18	352	380
TOTAL	3	7	52	57	395	514

HEIDKE SKILL SCORE 0.43024

VERIFICATION OF 6 HOUR VISIBILITY FORECASTS
MCGUIRE AFB, WRIGHTSTOWN, N.J.
THE VERIFICATION CRITERION IS THE HEIDKE SKILL SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	3	3	5	12
2	1	1	4	3	4	13
3	1	1	12	12	21	47
4	2	0	7	16	23	48
5	1	1	11	19	365	397
TOTAL	5	4	37	53	418	517

HEIDKE SKILL SCORE 0.39190

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	2	1	1	5
2	1	1	4	0	3	9
3	2	1	6	4	9	22
4	0	1	13	17	36	67
5	2	0	12	31	369	414
TOTAL	5	4	37	53	418	517

HEIDKE SKILL SCORE 0.34683

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	1	1	0	1	3
2	0	0	0	0	0	0
3	2	2	17	15	25	61
4	2	0	8	19	27	56
5	1	1	11	19	365	397
TOTAL	5	4	37	53	418	517

HEIDKE SKILL SCORE 0.42220

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	1	2	3	5	11
2	1	0	2	1	8	12
3	2	2	13	16	30	63
4	1	0	11	12	28	52
5	1	1	9	21	347	379
TOTAL	5	4	37	53	418	517

HEIDKE SKILL SCORE 0.32354

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	1	2	2	0	5
3	2	3	22	23	50	100
4	2	0	4	18	65	89
5	1	0	7	10	303	323
TOTAL	5	4	37	53	418	517

HEIDKE SKILL SCORE 0.31070

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	1	1	0	2	4
2	0	0	0	0	1	1
3	3	2	22	30	42	99
4	1	0	8	12	34	55
5	1	1	6	11	339	358
TOTAL	5	4	37	53	418	517

HEIDKE SKILL SCORE 0.36689

VERIFICATION OF 3 HOUR CEILING FORECASTS
ATLANTIC CITY, N.J. AIRPORT
THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

	PERSISTENCE					
	OBSERVED					
FORE-CAST	1	2	3	4	5	TOTAL
1	2	6	3	0	3	14
2	0	16	9	2	4	31
3	1	3	11	8	3	26
4	1	2	5	12	11	31
5	1	5	4	16	553	579
TOTAL	5	32	32	38	574	681

VERNON SKILL SCORE 0.66371

FORE- CAST	SUBJECTIVE					TOTAL
	OBSERVED					
	1	2	3	4	5	
1	0	2	0	0	0	2
2	3	16	7	2	6	34
3	0	11	13	5	9	38
4	0	1	6	17	19	43
5	2	2	6	14	540	564
TOTAL	5	32	32	38	574	681

VERNON SKILL SCORE 0.65499

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	2	3	0	0	1	6
2	0	15	9	0	4	28
3	1	7	14	10	5	37
4	1	2	5	12	11	31
5	1	5	4	16	553	579
TOTAL	5	32	32	38	574	681

VERNON SKILL SCORE 0.67698

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	1	4	2	0	1	8
2	1	15	13	2	5	36
3	0	5	7	6	9	27
4	1	3	7	10	8	29
5	2	5	3	20	551	581
TOTAL	5	32	32	38	574	681

VERNON SKILL SCORE 0.62336

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	2	22	12	2	7	45
3	2	5	17	22	81	138
4	0	0	0	0	0	0
5	1	5	3	2	480	491
TOTAL	5	32	32	38	574	681

VERNON SKILL SCORE 0.46555

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	1	4	2	0	1	8
2	1	17	7	1	4	30
3	1	5	14	9	7	36
4	1	2	6	12	12	33
5	1	4	3	16	550	574
TOTAL	5	32	32	38	574	681

VERNON SKILL SCORE 0.47611

VERIFICATION OF 5 HOUR CEILING FORECASTS
ATLANTIC CITY, N.J. AIRPORT
THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	2	2	9	14
2	1	12	6	5	6	30
3	1	3	5	10	5	24
4	1	4	6	11	9	31
5	2	0	5	25	520	552
TOTAL	5	20	24	53	549	651

VERNON SKILL SCORE 0.51266

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	0	0	0	1
2	3	11	6	4	3	29
3	1	8	8	13	10	40
4	0	0	6	18	18	42
5	1	0	2	18	518	539
TOTAL	5	20	24	53	549	651

VERNON SKILL SCORE 0.64745

FORE-CAST	CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	1	0	4	6
2	1	9	4	2	3	19
3	1	6	8	15	13	43
4	1	4	6	11	9	31
5	2	0	5	25	520	552
TOTAL	5	20	24	53	549	651

VERNON SKILL SCORE 0.53832

FORE-CAST	GROUPING OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	0	2	6	9
2	0	11	10	6	5	32
3	2	6	5	9	11	33
4	1	2	4	12	10	29
5	2	0	5	24	517	548
TOTAL	5	20	24	53	549	651

VERNON SKILL SCORE 0.52394

FORE-CAST	LOW CONTINGENCY PROGNOSIS OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	3	20	22	34	94	173
3	0	0	0	0	0	0
4	0	0	1	4	37	42
5	2	0	1	15	418	436
TOTAL	5	20	24	53	549	651

VERNON SKILL SCORE 0.31056

FORE-CAST	MULTIPLE DISCRIMINANT ANALYSIS OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	2	2	7	14
2	0	12	6	7	1	26
3	2	4	8	10	4	28
4	1	1	4	11	21	38
5	2	2	4	23	514	545
TOTAL	5	20	24	53	549	651

VERNON SKILL SCORE 0.42146

VERIFICATION OF 7 HOUR CEILING FORECASTS
ATLANTIC CITY, N.J. AIRPORT
THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

PERSISTENCE .						
OBSERVED						
FORE- CAST	1	2	3	4	5	TOTAL
1	0	1	2	2	10	15
2	1	11	7	3	11	33
3	0	4	5	8	8	25
4	2	2	9	10	11	34
5	5	3	15	26	51	569
TOTAL	8	21	38	51	558	676

VERNON SKILL SCORE 0.40541

FORE- CAST	SUBJECTIVE					TOTAL
	OBSERVED					
	1	2	3	4	5	
1	0	1	0	1	1	3
2	3	10	12	2	6	33
3	0	8	9	10	10	37
4	0	0	11	17	22	50
5	5	2	6	21	51	553
TOTAL	8	21	38	51	558	676

VERNON SKILL SCORE 0.55856

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	2	0	4	7
2	1	10	7	3	5	26
3	0	5	5	10	20	40
4	2	2	9	10	11	34
5	5	3	15	28	51	569
TOTAL	8	21	38	51	558	676

VERNON SKILL SCORE 0.42662

GROUPING

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	0	1	2	4
2	1	11	9	8	10	39
3	1	5	10	7	9	32
4	0	1	7	9	23	40
5	6	3	12	26	51	561
TOTAL	8	21	38	51	558	676

VERNON SKILL SCORE 0.40277

LUND CONTINGENCY PROGNOSIS

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	3	5	3	57	68
2	1	13	13	12	31	70
3	1	3	11	12	22	49
4	1	2	5	10	44	62
5	5	0	4	14	404	427
TOTAL	8	21	38	51	558	676

VERNON SKILL SCORE 0.25676

MULTIPLE DISCRIMINANT ANALYSIS

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	1	1
2	0	9	10	11	2	32
3	2	8	7	7	15	41
4	1	3	11	10	31	56
5	5	1	10	21	509	546
TOTAL	8	21	38	51	558	676

VERNON SKILL SCORE 0.47619

VERIFICATION OF 3 HOUR VISIBILITY FORECASTS
ATLANTIC CITY, N.J. AIRPORT
THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	7	2	2	3	10	24
2	0	8	6	3	9	26
3	1	3	4	3	6	17
4	2	1	0	2	8	13
5	3	3	10	24	579	619
TOTAL	13	17	22	35	612	699
VERNON SKILL SCORE					0.47001	

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	0	1	4	0	6
2	5	6	4	0	7	22
3	4	3	8	7	19	41
4	2	4	3	7	18	34
5	1	4	6	17	568	596
TOTAL	13	17	22	35	612	699
VERNON SKILL SCORE					0.48493	

FORE-CAST	CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	5	3	0	3	1	12
2	2	5	7	1	12	27
3	1	5	1	5	11	23
4	1	0	4	1	4	10
5	5	4	10	25	584	627
TOTAL	13	17	22	35	612	699
VERNON SKILL SCORE					0.46140	

FORE-CAST	GROUPING OBSERVED					TOTAL
	1	2	3	4	5	
1	7	2	3	3	11	26
2	0	0	0	2	2	4
3	1	9	6	2	14	32
4	1	1	3	3	9	17
5	4	5	10	25	576	620
TOTAL	13	17	22	35	612	699
VERNON SKILL SCORE					0.40849	

FORE-CAST	CHUD CONTINGENCY ANALYSIS OBSERVED					TOTAL
	1	2	3	4	5	
1		2	7	6	18	44
2	0	4	1	1	4	10
3	3	4	5	9	21	42
4		1	5	9	14	14
5	1	2	5	10	446	463
TOTAL	13	17	22	35	612	699
VERNON SKILL SCORE					0.72277	

FORE-CAST	MULTIPLE DISCRIMINANT ANALYSIS OBSERVED					TOTAL
	1	2	3	4	5	
1	8	4	3	5	13	33
2	0	3	3	0	6	12
3	2	6	5	6	9	28
4	0	0	2	2	11	15
5	3	4	9	22	573	611
TOTAL	13	17	22	35	612	699
VERNON SKILL SCORE					0.45451	

VERIFICATION OF 5 HOUR VISIBILITY FORECASTS
ATLANTIC CITY, N.J. AIRPORT
THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	1	2	19	22
2	1	3	7	7	13	26
3	1	0	3	2	10	16
4	0	0	1	2	10	13
5	4	4	7	14	557	586
TOTAL	6	7	19	22	609	663

VERNON SKILL SCORE 0.23239

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	1	1
2	3	3	2	3	2	13
3	1	2	9	5	13	30
4	1	0	4	5	12	22
5	1	2	4	9	581	597
TOTAL	6	7	19	22	609	663

VERNON SKILL SCORE 0.52433

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	1	1	2	7	11
2	0	2	7	2	5	16
3	1	0	1	3	17	22
4	1	0	2	1	16	20
5	4	4	8	14	564	594
TOTAL	6	7	19	22	609	663

VERNON SKILL SCORE 0.25750

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	4	2	11	17
2	0	0	3	2	9	14
3	1	3	5	3	21	33
4	1	0	0	1	8	10
5	4	4	7	14	560	589
TOTAL	6	7	19	22	609	663

VERNON SKILL SCORE 0.22946

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	1	5	4	30	41
2	0	2	3	0	2	7
3	1	0	3	3	5	12
4	2	1	2	3	26	34
5	2	3	6	12	546	569
TOTAL	6	7	19	22	609	663

VERNON SKILL SCORE 0.24754

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	2	7	3	25	38
2	0	1	2	1	6	10
3	0	0	1	2	9	12
4	0	0	3	5	23	31
5	5	4	3	11	546	572
TOTAL	6	7	19	22	609	663

VERNON SKILL SCORE 0.22212

VERIFICATION OF 7 HOUR VISIBILITY FORECASTS
ATLANTIC CITY, N.J. AIRPORT
THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	1	0	20	21
2	1	3	5	1	15	25
3	2	1	1	0	12	16
4	0	0	0	0	14	14
5	7	3	12	13	546	581
TOTAL	10	7	19	14	607	657

VERNON SKILL SCORE 0.15047

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	1	1
2	2	2	1	0	7	12
3	1	2	9	2	13	27
4	1	3	1	2	15	22
5	6	0	8	10	571	595
TOTAL	10	7	19	14	607	657

VERNON SKILL SCORE 0.37056

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	1	1	0	8	10
2	2	2	3	1	7	15
3	1	0	1	0	9	11
4	0	1	0	0	20	21
5	7	3	14	13	563	600
TOTAL	10	7	19	14	607	657

VERNON SKILL SCORE 0.19305

GROUPING -
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	2	1	17	20
2	0	2	2	0	14	18
3	4	2	2	0	21	29
4	0	0	0	1	6	7
5	6	3	13	12	549	583
TOTAL	10	7	19	14	607	657

VERNON SKILL SCORE 0.14724

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	2	3	7	2	62	76
2	3	2	6	5	117	133
3	1	0	3	0	19	23
4	1	1	1	1	26	30
5	3	1	7	6	363	375
TOTAL	10	7	19	14	607	657

VERNON SKILL SCORE 0.09288

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	2	1	0	3	7
2	0	1	3	0	11	15
3	1	0	4	0	6	11
4	0	1	3	3	24	31
5	8	3	8	11	563	593
TOTAL	10	7	19	14	607	657

VERNON SKILL SCORE 0.27326

VERIFICATION OF 2 HOUR CEILING FORECASTS
WESTOVER AFB, CHICPEE, MASS.
THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	8	3	0	2	2	15
2	9	8	5	0	0	18
3	0	7	27	7	3	44
4	0	3	6	44	35	38
5	4	3	5	18	455	485
TOTAL	17	24	43	71	495	650

VERNON SKILL SCORE 0.69594

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	3	2	0	1	1	7
2	11	10	8	0	1	30
3	0	8	24	9	3	44
4	0	3	7	44	22	76
5	3	1	4	17	468	493
TOTAL	17	24	43	71	495	650

VERNON SKILL SCORE 0.73021

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	9	3	0	2	2	16
2	5	11	7	0	0	23
3	0	5	26	4	3	38
4	0	5	6	50	25	86
5	3	0	4	15	465	487
TOTAL	17	24	43	71	495	650

VERNON SKILL SCORE 0.75440

FORE-CAST	GROUPING OBSERVED					TOTAL
	1	2	3	4	5	
1	9	3	0	2	2	16
2	4	11	6	0	0	21
3	1	4	29	8	3	50
4	0	1	5	42	29	77
5	3	0	3	19	461	486
TOTAL	17	24	43	71	495	650

VERNON SKILL SCORE 0.74737

LUND CONTINGENCY PROGNOSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	8	3	0	2	2	15
2	5	8	5	0	0	18
3	0	7	27	7	3	44
4	0	3	6	44	35	88
5	4	3	5	18	455	485
TOTAL	17	24	43	71	495	650

VERNON SKILL SCORE 0.69594

MULTIPLE DISCRIMINANT ANALYSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	10	4	0	2		16
2	3	14	13	0		30
3	1	4	19	7		33
4	0	2	8	42	11	63
5	3	0	3	20	480	506
TOTAL	17	24	43	71	495	650

VERNON SKILL SCORE 0.77208

VERIFICATION OF 4 HOUR CEILING FORECASTS
WESTOVER AFB, CHICOPEE, MASS.
THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE-CAST	PERSISTENCE					TOTAL
	OBSERVED					
	1	2	3	4	5	
1	3	2	2	2	7	16
2	1	9	7	6	2	25
3	1	5	24	8	10	48
4	1	4	9	36	29	79
5	1	1	9	27	449	487
TOTAL	7	21	51	79	497	655

VERNON SKILL SCORE 0.57885

SUBJECTIVE						
OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	1	1	0	0	2	4
2	3	6	4	4	3	20
3	2	10	21	12	3	48
4	0	3	15	39	36	93
5	1	1	11	24	453	490
TOTAL	7	21	51	79	497	655

VERNON SKILL SCORE 0.60036

CLIMATOLOGICAL EXPECTANCY OF PERSISTENCE

FORE-CAST	UNSERVED					TOTAL
	1	2	3	4	5	
1	3	0	0	2	0	5
2	1	7	1	3	0	12
3	1	9	32	11	19	72
4	1	4	9	36	29	79
5	1	1	9	27	449	487
TOTAL	7	21	51	79	497	655

VERNON SKILL SCORE 0.60843

GROUPING

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	3	3	4	3	8	21
2	2	11	8	4	2	27
3	1	6	25	15	9	56
4	0	0	7	21	36	71
5	1	1	7	29	442	480
TOTAL	7	21	51	79	497	655

VERNON SKILL SCORE 0.58493

LUND CONTINGENCY PROGNOSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	3	2	2	2	7	16
2	1	9	7	6	2	25
3	2	9	33	44	39	127
4	0	1	3	4	58	66
5	1	0	6	23	391	421
TOTAL	7	21	51	79	497	655

VERNON SKILL SCORE 0.47148

MULTIPLE DISCRIMINANT ANALYSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	5	4	5	2	4	20
2	1	8	12	3	2	26
3	0	4	20	15	5	44
4	0	4	5	33	22	64
5	1	1	9	26	464	501
TOTAL	7	21	51	79	497	655

VERNON SKILL SCORE 0.63458

VERIFICATION OF 6 HOUR CEILING FORECASTS
WESTOVER AFB, CHICOPEE, MASS.
THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	2	4	9	16
2	2	2	7	8	6	25
3	2	5	19	15	6	47
4	1	7	16	31	32	87
5	0	3	5	46	440	494
TOTAL	5	18	49	104	493	669

VERNON SKILL SCORE 0.45634

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	0	1	0	1	3
2	2	6	10	1	1	20
3	0	5	20	11	3	39
4	1	3	13	51	39	107
5	1	4	5	41	449	500
TOTAL	5	18	49	104	493	669

VERNON SKILL SCORE 0.59684

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	1	0	1
2	2	2	6	3	3	16
3	2	6	21	21	10	60
4	1	7	16	31	32	87
5	0	3	6	48	448	505
TOTAL	5	18	49	104	493	669

VERNON SKILL SCORE 0.51039

GROUPING

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	4	0	3	8
2	2	2	8	3	8	23
3	2	6	23	24	9	64
4	0	4	6	31	29	70
5	1	5	8	46	444	504
TOTAL	5	18	49	104	493	669

VERNON SKILL SCORE 0.49085

LUND CONTINGENCY PROGNOSIS

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	2	1	4	3	4	14
2	2	5	26	10	7	50
3	1	8	15	49	38	111
4	0	1	0	15	73	89
5	0	3	4	27	371	405
TOTAL	5	18	49	104	493	669

VERNON SKILL SCORE 0.41649

MULTIPLE DISCRIMINANT ANALYSIS

FORE- CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	1	1	2	1	1	6
2	2	2	10	7	3	24
3	1	8	26	22	10	67
4	1	3	7	34	23	68
5	0	4	4	40	45	504
TOTAL	5	18	49	104	493	669

VERNON SKILL SCORE 0.57342

VERIFICATION OF 2 HOUR VISIBILITY FORECASTS
WESTOVER AFB, CHICOPEE, MASS.
THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	12	2	2	2	0	18
2	2	5	7	1	0	15
3	8	4	20	5	4	41
4	1	1	14	15	14	45
5	1	2	11	27	522	563
TOTAL	24	14	54	50	540	682

VERNON SKILL SCORE 0.68209

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	4	2	1	0	0	7
2	10	3	9	0	0	22
3	10	9	32	12	8	71
4	0	0	7	24	26	57
5	0	0	5	14	506	525
TOTAL	24	14	54	50	540	682

VERNON SKILL SCORE 0.72206

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	5	1	2	1	0	9
2	8	4	6	1	0	19
3	9	6	21	6	4	46
4	1	1	14	15	14	45
5	1	2	11	27	522	563
TOTAL	24	14	54	50	540	682

VERNON SKILL SCORE 0.65984

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	17	4	4	2	0	27
2	1	3	7	0	0	11
3	5	5	28	11	7	56
4	1	2	6	14	15	40
5	0	0	7	23	518	548
TOTAL	24	14	54	50	540	682

VERNON SKILL SCORE 0.73490

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	15	4	3	2	0	24
2	9	10	50	46	141	256
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	0	0	1	2	399	402
TOTAL	24	14	54	50	540	682

VERNON SKILL SCORE 0.36468

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	16	4	6	2	0	28
2	5	4	10	1	0	20
3	3	5	29	11	5	53
4	0	1	4	17	12	34
5	0	0	5	19	523	547
TOTAL	24	14	54	50	540	682

VERNON SKILL SCORE 0.77185

VERIFICATION OF 4 HOUR VISIBILITY FORECASTS
WESTOVER AFB, CHICOPEE, MASS.
THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

PERSISTENCE						
OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	5	2	10	2	4	23
2	1	2	5	0	4	12
3	2	6	22	7	9	46
4	2	2	12	12	18	46
5	2	1	12	22	508	545
TOTAL	12	13	61	43	543	672

VERNON SKILL SCORE 0.56413

SUBJECTIVE						
OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	3	1	1	0	0	5
2	1	1	2	1	4	9
3	4	7	23	7	11	52
4	3	3	23	15	26	70
5	1	1	12	20	502	536
TOTAL	12	13	61	43	543	672

VERNON SKILL SCORE 0.55547

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE

OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	5	1	2	0	1	9
2	0	2	3	0	2	7
3	3	6	24	10	10	53
4	2	3	20	11	22	58
5	2	1	12	22	508	545
TOTAL	12	13	61	43	543	672

VERNON SKILL SCORE 0.57785

GROUPING

OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	5	4	13	1	6	29
2	2	0	8	1	2	13
3	2	4	16	6	16	44
4	1	3	10	13	13	42
5	2	2	14	22	504	544
TOTAL	12	13	61	43	543	672

VERNON SKILL SCORE 0.52565

LUND CONTINGENCY PROGNOSIS

OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	6	4	15	2	8	35
2	0	2	17	4	5	28
3	5	1	26	35	139	212
4	0	0	0	0	0	0
5	1	0	3	2	391	397
TOTAL	12	13	61	43	543	672

VERNON SKILL SCORE 0.36777

MULTIPLE DISCRIMINANT ANALYSIS

OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	5	5	10	2	4	26
2	0	1	7	1	3	12
3	6	4	29	16	14	69
4	1	1	5	7	26	41
5	0	1	10	17	496	524
TOTAL	12	13	61	43	543	672

VERNON SKILL SCORE 0.57974

VERIFICATION OF 6 HOUR VISIBILITY FORECASTS
WESTOVER AFB, CHICOPEE, MASS.
THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	2	2	2	3	14	23
2	1	0	3	2	6	12
3	3	1	14	9	13	42
4	2	4	7	12	17	42
5	1	2	14	31	472	520
TOTAL	9	11	40	57	522	639

VERNON SKILL SCORE 0.37864

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	1	1	0	0	3
2	0	1	7	2	4	14
3	3	3	11	10	4	31
4	4	5	7	13	23	52
5	1	1	14	32	491	539
TOTAL	9	11	40	57	522	639

VERNON SKILL SCORE 0.47436

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	2	2	2	2	2	10
2	1	0	3	0	4	8
3	5	4	15	15	10	49
4	0	3	6	9	34	52
5	1	2	14	31	472	520
TOTAL	9	11	40	57	522	639

VERNON SKILL SCORE 0.44817

GROUPING

OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	2	3	9	1	9	24
2	1	1	3	5	13	23
3	2	4	9	12	22	49
4	2	1	4	19	36	53
5	2	2	15	29	442	490
TOTAL	9	11	40	57	522	639

VERNON SKILL SCORE 0.33152

LUND CONTINGENCY PROGNOSIS

OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	3	2	8	6	10	29
2	3	3	5	6	30	49
3	7	5	25	36	181	249
4	1	1	0	3	13	18
5	0	0	2	4	218	294
TOTAL	1	11	40	57	522	639

VERNON SKILL SCORE 0.21294

MULTIPLE DISCRIMINANT ANALYSIS

OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	2	2	2	2	10	18
2	3	2	5	4	5	19
3	3	3	17	10	34	67
4	1	2	0	15	28	52
5	0	2	10	26	445	483
TOTAL	9	11	40	57	522	639

VERNON SKILL SCORE 0.40433

VERIFICATION OF 3 HOUR CEILING FORECASTS
WASHINGTON NATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	0	0	0	1	2
2	0	1	3	1	2	7
3	0	0	10	2	0	12
4	0	0	6	13	9	28
5	1	1	3	16	471	492
TOTAL	2	2	22	32	483	541

VERNON SKILL SCORE 0.61472

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	0	3	0	2	5
3	0	1	12	9	3	25
4	0	0	4	13	16	33
5	2	1	3	10	462	478
TOTAL	2	2	22	32	483	541

VERNON SKILL SCORE 0.58026

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	1	1	3	0	2	6
3	0	1	10	3	1	15
4	0	0	6	13	9	28
5	1	1	3	16	471	492
TOTAL	2	2	22	32	483	541

VERNON SKILL SCORE 0.60883

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	0	0	0	0	1
2	0	1	4	1	0	6
3	0	0	12	4	4	20
4	0	0	3	9	8	20
5	1	1	3	18	471	494
TOTAL	2	2	22	32	483	541

VERNON SKILL SCORE 0.62315

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	1	1	3	1	3	9
3	0	0	16	15	9	40
4	0	1	2	9	66	78
5	1	0	1	7	405	414
TOTAL	2	2	22	32	483	541

VERNON SKILL SCORE 0.46074

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	1	0	2	1	2	6
3	0	1	16	7	3	25
4	0	1	4	8	7	20
5	1	0	2	16	471	490
TOTAL	2	2	22	32	483	541

VERNON SKILL SCORE 0.62194

VERIFICATION OF 5 HOUR CEILING FORECASTS
WASHINGTON NATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	2	2
2	0	1	3	2	1	7
3	0	0	5	6	2	13
4	0	1	6	10	10	27
5	0	3	4	14	474	495
TOTAL	0	5	19	32	489	544

VERNON SKILL SCORE 0.49695

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	0	3	2	0	5
3	0	1	8	7	3	19
4	0	1	6	11	21	39
5	0	3	1	12	465	481
TOTAL	0	5	18	32	489	544

VERNON SKILL SCORE 0.54415

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	0	1	1	1	3
3	0	1	4	2	3	10
4	0	1	9	15	11	36
5	0	3	4	14	474	495
TOTAL	0	5	18	22	489	544

VERNON SKILL SCORE 0.50347

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	1	4	3	4	12
3	0	0	7	10	5	22
4	0	1	4	7	18	30
5	0	3	3	12	462	480
TOTAL	0	5	18	32	489	544

VERNON SKILL SCORE 0.47447

LOW CONFIDENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	1	3	2	3	7
3	0	2	14	25	17	116
4	0	0	0	0	0	0
5	0	2	1	5	409	417
TOTAL	0	5	18	32	489	544

VERNON SKILL SCORE 0.32130

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	1	2	2	1	6
3	0	0	9	10	2	21
4	0	2	3	4	13	22
5	0	2	4	11	473	490
TOTAL	0	5	18	32	489	544

VERNON SKILL SCORE 0.56602

VERIFICATION OF 7 HOUR CEILING FORECASTS
WASHINGTON NATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

PERSISTENCE						
OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	3	3
2	0	1	2	1	7	11
3	0	3	4	12	6	25
4	0	2	6	10	17	35
5	1	2	9	22	573	607
TOTAL	1	8	21	45	606	681

VERNON SKILL SCORE 0.37301

SUBJECTIVE						
OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	2	3	1	2	8
3	0	3	6	10	7	26
4	0	2	7	15	19	43
5	1	1	5	19	578	604
TOTAL	1	8	21	45	606	681

VERNON SKILL SCORE 0.51364

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	1	1	3	2	7
3	0	3	8	9	13	33
4	0	2	3	11	18	34
5	1	2	9	22	573	607
TOTAL	1	8	21	45	606	681

VERNON SKILL SCORE 0.41664

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	3	3
2	0	2	0	1	5	8
3	0	3	10	13	13	39
4	0	0	4	11	18	33
5	1	3	7	20	567	598
TOTAL	1	8	21	45	606	681

VERNON SKILL SCORE 0.41426

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	2	2	0	5	9
3	0	4	14	28	28	74
4	0	1	7	9	75	87
5	1	1	3	6	498	511
TOTAL	1	8	21	45	606	681

VERNON SKILL SCORE 0.38254

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	3	2	1	3	9
3	0	2	11	21	15	49
4	0	2	4	7	14	27
5	1	1	4	16	574	596
TOTAL	1	8	21	45	606	681

VERNON SKILL SCORE 0.51015

VERIFICATION OF 3 HOUR VISIBILITY FORECASTS
WASHINGTON NATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	1	1	2	1	6
2	1	0	1	0	0	2
3	0	1	1	2	3	7
4	0	0	3	5	13	21
5	1	0	7	18	547	573
TOTAL	3	2	13	27	564	609

VERNON SKILL SCORE 0.41359

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	0	2	0	2	4
3	2	1	2	4	4	13
4	1	1	2	6	10	20
5	0	0	7	17	548	572
TOTAL	3	2	13	27	564	609

VERNON SKILL SCORE 0.40389

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	1	1	0	1	3
2	0	0	1	0	0	1
3	1	0	1	5	0	15
4	1	1	3	4	8	17
5	1	0	7	18	547	573
TOTAL	3	2	13	27	564	609

VERNON SKILL SCORE 0.34367

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	1	2	1	4
2	1	0	0	0	0	1
3	1	2	4	2	8	17
4	0	0	1	4	12	17
5	1	0	7	19	543	570
TOTAL	3	2	13	27	564	609

VERNON SKILL SCORE 0.36479

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	2	2	3	3	4	14
2	0	0	0	0	0	0
3	0	0	1	1	0	2
4	0	0	1	3	7	11
5	1	0	8	20	553	582
TOTAL	3	2	13	27	564	609

VERNON SKILL SCORE 0.40013

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	1	0	1	0	1	3
2	1	1	2	2	4	10
3	0	1	0	3	3	7
4	0	0	3	4	11	18
5	1	0	7	18	545	571
TOTAL	3	2	13	27	564	609

VERNON SKILL SCORE 0.38397

VERIFICATION OF 5 HOUR VISIBILITY FORECASTS
WASHINGTON NATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	2	0	4	7
2	0	0	0	0	3	3
3	0	0	1	1	7	9
4	1	0	2	7	12	22
5	2	2	6	17	62	65
TOTAL	3	3	11	25	654	696

VERNON SKILL SCORE 0.24401

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	1	0	0	0	4	5
3	0	1	1	3	11	16
4	0	0	2	3	9	14
5	2	2	8	19	630	661
TOTAL	3	3	11	25	654	696

VERNON SKILL SCORE 0.1944

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	2	0	2	4
2	0	0	0	0	2	2
3	1	0	2	5	10	18
4	0	1	1	1	5	8
5	2	2	6	19	635	664
TOTAL	3	3	11	25	654	696

VERNON SKILL SCORE 0.23929

GROUPING
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	1	2	7	10
2	0	1	1	0	2	4
3	0	0	2	3	18	23
4	0	0	0	3	11	14
5	3	2	7	17	616	645
TOTAL	3	3	11	25	654	696

VERNON SKILL SCORE 0.17302

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	1	2	0	4	7
2	1	0	0	4	8	13
3	0	0	4	7	33	44
4	0	0	2	7	18	27
5	2	2	3	12	591	610
TOTAL	3	3	11	25	654	696

VERNON SKILL SCORE 0.22541

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	1	1	0	3	5
2	0	0	2	0	2	4
3	2	0	0	2	7	11
4	0	0	2	4	25	31
5	1	2	6	19	617	645
TOTAL	3	3	11	25	654	696

VERNON SKILL SCORE 0.23300

VERIFICATION OF 7 HOUR VISIBILITY FORECASTS
WASHINGTON NATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	1	0	6	7
2	0	0	1	0	2	3
3	0	1	1	1	6	9
4	0	0	4	4	15	23
5	3	1	5	15	647	671
TOTAL	3	2	12	20	676	713

VERNON SKILL SCORE 0.21211

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	1	0	0	0	3	4
3	0	0	2	4	16	22
4	0	0	1	1	8	10
5	2	2	9	15	649	677
TOTAL	3	2	12	20	676	713

VERNON SKILL SCORE 0.17051

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	1	0	3	4
2	0	0	0	0	1	1
3	0	1	3	3	12	19
4	0	0	1	3	4	5
5	3	1	7	17	615	624
TOTAL	3	2	12	20	676	713

VERNON SKILL SCORE 0.19028

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	1	0	3	4
2	0	0	3	0	5	8
3	0	0	4	5	24	33
4	0	1	1	3	39	44
5	3	1	3	12	605	624
TOTAL	3	2	12	20	676	713

VERNON SKILL SCORE 0.20166

LOW CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	7	7
4	0	0	0	0	2	2
5	3	2	12	20	647	704
TOTAL	3	2	12	20	676	713

VERNON SKILL SCORE -0.04652

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	2	2
2	0	0	1	1	9	11
3	0	1	1	0	1	3
4	0	0	6	3	15	24
5	3	1	4	16	649	673
TOTAL	3	2	12	20	676	713

VERNON SKILL SCORE 0.21024

VERIFICATION OF 3 HOUR CEILING FORECASTS
 IDLEWILD INTERNATIONAL AIRPORT
 THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

PERSISTENCE						
OBSERVED						
FORE- CAST	1	2	3	4	5	TOTAL
1	9	9	2	1	3	26
2	5	24	6	4	4	43
3	0	13	28	7	10	58
4	0	3	11	33	37	84
5	0	6	10	32	1024	1072
TOTAL	14	35	57	77	1080	1283

VERNON SKILL SCORE 0.69006

SUBJECTIVE						
OBSERVED						
FORE- CAST	1	2	3	4	5	TOTAL
1	2	0	1	0	1	4
2	8	30	9	2	9	58
3	2	14	24	15	8	63
4	0	5	16	39	35	95
5	2	6	7	21	1027	1063
TOTAL	14	55	57	77	1080	1283

VERNON SKILL SCORE 0.68840

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE

OBSERVED						
FORE- CAST	1	2	3	4	5	TOTAL
1	5	3	2	0	2	12
2	9	30	6	5	7	57
3	0	13	28	7	10	58
4	0	3	11	33	37	84
5	0	6	10	32	1024	1072
TOTAL	14	55	57	77	1080	1283

VERNON SKILL SCORE 0.69246

GROUPING

OBSERVED						
FORE- CAST	1	2	3	4	5	TOTAL
1	1	4	0	1	0	6
2	12	25	15	4	8	64
3	1	18	24	14	10	67
4	0	2	10	29	38	79
5	0	6	8	29	1024	1067
TOTAL	14	55	57	77	1080	1283

VERNON SKILL SCORE 0.68161

LUND CONTINGENCY PROGNOSIS

OBSERVED						
FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	14	33	8	5	9	69
3	0	17	47	52	192	308
4	0	0	0	0	0	0
5	0	5	2	20	879	906
TOTAL	14	55	57	77	1080	1283

VERNON SKILL SCORE 0.46724

MULTIPLE DISCRIMINANT ANALYSIS

OBSERVED						
FORE- CAST	1	2	3	4	5	TOTAL
1	4	5	0	0	1	10
2	9	22	7	4	4	48
3	1	19	28	14	8	70
4	0	2	12	25	30	69
5	0	7	10	34	1035	1086
TOTAL	14	55	57	77	1080	1283

VERNON SKILL SCORE 0.68638

VERIFICATION OF 5 HOUR CEILING FORECASTS
IDLEWILD INTERNATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	6	7	3	0	11	27
2	5	27	11	6	12	61
3	1	12	27	12	22	74
4	1	6	11	41	54	113
5	10	8	18	52	1088	1176
TOTAL	23	60	70	111	1187	1451

VERNON SKILL SCORE 0.54508

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	2	0	0	0	2
2	9	22	10	7	16	64
3	5	18	33	16	17	89
4	0	6	13	45	45	111
5	9	12	12	43	1109	1185
TOTAL	23	60	70	111	1187	1451

VERNON SKILL SCORE 0.57481

FORE-CAST	CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	2	3	0	0	1	6
2	10	30	11	8	20	79
3	0	13	30	10	24	77
4	1	6	11	41	54	113
5	10	8	18	52	1088	1176
TOTAL	23	60	70	111	1187	1451

VERNON SKILL SCORE 0.55119

FORE-CAST	GROUPING OBSERVED					TOTAL
	1	2	3	4	5	
1	7	13	4	0	11	35
2	3	17	9	4	9	42
3	2	13	28	17	31	91
4	2	9	14	42	54	121
5	9	8	15	48	1082	1162
TOTAL	23	60	70	111	1187	1451

VERNON SKILL SCORE 0.53478

FORE-CAST	LUND CONTINGENCY PROGNOSIS OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	11	36	23	14	37	121
3	1	14	27	29	71	142
4	3	4	13	40	125	185
5	8	6	7	28	954	1003
TOTAL	23	60	70	111	1187	1451

VERNON SKILL SCORE 0.45933

FORE-CAST	MULTIPLE DISCRIMINANT ANALYSIS OBSERVED					TOTAL
	1	2	3	4	5	
1	1	1	2	0	0	4
2	9	28	11	4	11	63
3	0	15	34	17	18	84
4	4	3	14	50	68	144
5	9	8	9	40	1090	1156
TOTAL	23	60	70	111	1187	1451

VERNON SKILL SCORE 0.57463

VERIFICATION OF 7 HOUR CEILING FORECASTS
 MCLELLAN INTERNATIONAL AIRPORT
 THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	6	1	2	1	15	22
2	8	20	4	9	20	61
3	1	15	16	18	24	74
4	3	7	17	29	57	113
5	6	16	21	67	1065	1177
TOTAL	24	61	60	126	1181	1452

VERNON SKILL SCORE 0.43612

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	2	2	0	0	0	2
2	10	21	5	6	13	55
3	4	27	28	23	21	96
4	2	10	16	44	54	126
5	6	13	11	53	1093	1173
TOTAL	24	61	60	126	1181	1452

VERNON SKILL SCORE 0.56092

CLIMATOLOGICAL EXPECTANCY OF PERSISTENCE
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	11	16	6	2	28	63
3	4	22	16	26	31	94
4	3	7	17	29	57	113
5	6	16	21	67	1065	1177
TOTAL	24	61	60	126	1181	1452

VERNON SKILL SCORE 0.43010

GROUPING
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	7	6	4	4	22
2	4	17	6	5	11	44
3	6	7	4	10	14	47
4	4	9	28	36	30	157
5	4	17	12	71	1072	1182
TOTAL	24	61	60	126	1181	1452

VERNON SKILL SCORE 0.44225

LOW CONTINGENCY PROGNOSIS
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	2	0	0	0	5	7
2	13	26	12	16	43	110
3	2	17	26	38	49	132
4	3	3	10	24	65	105
5	4	15	12	48	1219	1298
TOTAL	24	61	60	126	1181	1452

VERNON SKILL SCORE 0.44514

MULTIPLE DISCRIMINANT ANALYSIS
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	6	14	8	7	19	54
3	6	18	21	18	16	79
4	4	7	13	31	54	111
5	8	20	18	70	1092	1208
TOTAL	24	61	60	126	1181	1452

VERNON SKILL SCORE 0.44714

VERIFICATION OF 3 HOUR VISIBILITY FORECASTS
 IDLEWILD INTERNATIONAL AIRPORT
 THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	14	4	2	5	6	31
2	3	3	7	0	6	19
3	3	1	7	4	14	29
4	0	6	7	8	24	45
5	5	8	17	31	1151	1212
TOTAL	25	22	40	48	1201	1336
VERNON SKILL SCORE						0.50555

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	2	1	0	1	4	8
2	9	9	5	3	6	32
3	6	6	14	3	17	46
4	5	4	13	20	36	78
5	3	2	8	21	1138	1172
TOTAL	25	22	40	48	1201	1336
VERNON SKILL SCORE						0.55926

FORE- CAST	CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	11	2	1	2	8	24
2	6	5	4	3	4	22
3	3	5	12	6	17	43
4	0	2	6	6	21	35
5	5	8	17	31	1151	1212
TOTAL	25	22	40	48	1201	1336
VERNON SKILL SCORE						0.51325

FORE- CAST	GROUPING OBSERVED					TOTAL
	1	2	3	4	5	
1	3	3	2	0	1	9
2	7	0	9	7	19	42
3	4	2	6	2	11	25
4	5	7	5	10	24	51
5	6	10	18	29	1146	1209
TOTAL	25	22	40	48	1201	1336
VERNON SKILL SCORE						0.40291

FORE- CAST	LUND CONTINGENCY PROGNOSIS OBSERVED					TOTAL
	1	2	3	4	5	
1	12	2	3	4	3	24
2	4	4	5	1	8	22
3	4	3	9	4	10	30
4	0	3	5	6	15	29
5	5	10	18	33	1157	1223
TOTAL	25	22	40	48	1201	1336
VERNON SKILL SCORE						0.49722

FORE- CAST	MULTIPLE DISCRIMINANT ANALYSIS OBSERVED					TOTAL
	1	2	3	4	5	
1	10	2	2	3	2	19
2	6	5	5	0	6	22
3	4	6	5	3	9	27
4	1	3	11	3	28	46
5	4	6	17	39	1156	1222
TOTAL	25	22	40	48	1201	1336
VERNON SKILL SCORE						0.51649

VERIFICATION OF 5 HOUR VISIBILITY FORECASTS
IDLEWILD INTERNATIONAL AIRPORT
THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE-CAST	PERSISTENCE					TOTAL
	OBSERVED					
	1	2	3	4	5	
1	10	4	5	2	10	31
2	2	4	3	2	9	20
3	1	3	2	4	20	30
4	7	2	5	4	32	45
5	17	9	14	35	1115	1185
TOTAL	27	22	29	47	1186	1311

VERNON SKILL SCORE 0.37647

FORE-CAST	SURJECTIVE					TOTAL
	OBSERVED					
	1	2	3	4	5	
1	4	3	0	1	2	10
2	7	5	2	2	11	27
3	5	5	9	8	27	54
4	1	2	4	9	44	60
5	10	7	14	27	1102	1160
TOTAL	27	22	29	47	1186	1311

VERNON SKILL SCORE 0.41356

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	10	4	2	1	7	24
2	2	6	4	1	16	29
3	3	2	7	5	22	39
4	0	0	1	2	10	13
5	12	10	15	38	1131	1206
TOTAL	27	22	29	47	1186	1311

VERNON SKILL SCORE 0.40241

GROUPING

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	2	3	6	1	8	20
2	2	0	3	3	10	18
3	8	5	5	5	18	41
4	1	3	0	3	18	25
5	14	11	15	35	1132	1207
TOTAL	27	22	29	47	1186	1311

VERNON SKILL SCORE 0.31431

LUND CONTINGENCY PROGNOSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	13	12	10	6	36	77
2	2	1	3	3	23	32
3	2	6	5	10	153	176
4	0	0	0	0	0	0
5	10	3	11	26	974	1024
TOTAL	27	22	29	47	1186	1311

VERNON SKILL SCORE 0.25274

MULTIPLE DISCRIMINANT ANALYSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	6	2	1	1	2	12
2	7	6	5	4	13	35
3	2	7	6	5	20	40
4	2	2	2	5	28	38
5	10	5	15	33	1123	1186
TOTAL	27	22	29	47	1186	1311

VERNON SKILL SCORE 0.41728

VERIFICATION OF 7 HOUR VISIBILITY FORECASTS
 IDLEWILD INTERNATIONAL AIRPORT
 THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	10	0	4	2	15	31
2	3	1	5	1	10	20
3	2	3	3	1	22	31
4	1	2	4	2	36	45
5	15	12	26	44	1114	1211
TOTAL	31	18	42	50	1197	1338

VERNON SKILL SCORE

0.27667

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	2	1	1	0	0	4
2	7	4	5	1	11	28
3	10	8	13	10	28	69
4	2	2	6	7	45	64
5	10	3	15	32	1113	1173
TOTAL	31	18	42	50	1197	1338

VERNON SKILL SCORE

0.43513

CLIMATOLOGICAL EXPECTANCY OF PERSISTENCE
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	7	0	3	1	7	18
2	2	2	5	1	14	24
3	6	2	6	2	43	59
4	0	0	0	0	0	0
5	16	14	24	46	1133	1237
TOTAL	31	18	42	50	1197	1338

VERNON SKILL SCORE

0.25616

GROUPED
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	6	5	7	3	25	47
2	1	1	2	5	9	15
3	1	3	3	1	24	36
4	6	0	1	2	25	36
5	17	4	29	39	1113	1206
TOTAL	31	18	42	50	1197	1338

VERNON SKILL SCORE

0.24560

LOW CONFIDENCY PROGNOSIS
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	1	0	1
2	1	2	4	2	14	23
3	4	2	5	8	56	69
4	4	2	2	1	13	26
5	20	12	28	37	1114	1211
TOTAL	31	18	42	50	1197	1338

VERNON SKILL SCORE

0.20666

MULTIPLE DISCRIMINANT ANALYSIS
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	10	3	8	3	21	45
2	0	2	5	2	13	22
3	5	6	5	2	30	48
4	2	1	3	8	37	51
5	14	6	21	35	1096	1172
TOTAL	31	18	42	50	1197	1338

VERNON SKILL SCORE

0.32447

VERIFICATION OF 2 HOUR CEILING FORECASTS
OFFUTT AFB, OMAHA, NEBRASKA
THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

PERSISTENCE						
OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	1	1	1	0	0	3
2	0	21	2	4	1	28
3	0	2	9	1	2	14
4	0	3	2	60	26	71
5	0	4	2	20	532	558
TOTAL	1	31	16	85	561	694

VERNON SKILL SCORE 0.74713

SUBJECTIVE						
OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	1	8	9
2	0	21	3	2	4	30
3	0	5	9	5	3	22
4	0	2	2	54	29	87
5	1	3	2	23	517	546
TOTAL	1	31	16	85	561	694

VERNON SKILL SCORE 0.63949

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE

OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	1	3	1	1	0	6
2	0	19	2	3	1	25
3	0	2	9	1	2	14
4	0	3	2	60	26	91
5	0	4	2	20	532	558
TOTAL	1	31	16	85	561	694

VERNON SKILL SCORE 0.74108

GROUPING

OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	1	1	0	0	0	2
2	0	21	3	5	1	30
3	0	3	9	0	2	14
4	0	2	2	60	26	90
5	0	4	2	20	532	558
TOTAL	1	31	16	85	561	694

VERNON SKILL SCORE 0.75038

LUND CONTINGENCY PROGNOSIS

OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	1	22	2	4	1	31
3	0	2	9	1	3	15
4	0	4	3	70	110	187
5	0	3	1	10	447	461
TOTAL	1	31	16	85	561	694

VERNON SKILL SCORE 0.60985

MULTIPLE DISCRIMINANT ANALYSIS

OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	1	1	1	0	0	3
2	0	20	4	4	2	30
3	0	3	7	3	1	14
4	0	4	2	53	11	70
5	0	3	2	25	547	577
TOTAL	1	31	16	85	561	694

VERNON SKILL SCORE 0.75529

VERIFICATION OF 4 HOUR CEILING FORECASTS
OFFUTT AFB, OMAHA, NEBRASKA
THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

PERSISTENCE						
OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	1	0	0	1	2	4
2	2	11	6	3	5	27
3	0	3	6	4	2	15
4	0	4	3	33	35	75
5	0	6	8	23	494	531
TOTAL	3	24	23	64	538	652

VERNON SKILL SCORE 0.55236

SUBJECTIVE						
OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	1	2	1	1	4	9
2	0	9	7	3	5	24
3	1	8	6	8	5	28
4	1	1	4	36	29	71
5	0	4	5	16	495	520
TOTAL	3	24	23	64	538	652

VERNON SKILL SCORE 0.58184

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE

OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	0	1	0	0	0	1
2	3	12	7	5	8	35
3	0	1	5	3	1	10
4	0	4	3	33	35	75
5	0	6	8	23	494	531
TOTAL	3	24	23	64	538	652

VERNON SKILL SCORE 0.55445

GROUPING

OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	2	1	1	2	2	8
2	0	0	0	0	0	0
3	1	11	9	4	7	32
4	0	5	4	30	33	72
5	0	7	9	28	496	540
TOTAL	3	24	23	64	538	652

VERNON SKILL SCORE 0.48728

LUND CONTINGENCY PROGNOSIS

OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	3	12	9	5	7	36
3	0	5	6	21	12	44
4	0	5	4	28	75	112
5	0	2	4	10	444	460
TOTAL	3	24	23	64	538	652

VERNON SKILL SCORE 0.50906

MULTIPLE DISCRIMINANT ANALYSIS

OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL
1	1	0	0	0	1	2
2	2	10	6	4	4	26
3	0	7	6	5	4	22
4	0	4	5	32	23	64
5	0	3	6	23	506	538
TOTAL	3	24	23	64	538	652

VERNON SKILL SCORE 0.60962

VERIFICATION OF 6 HOUR CEILING FORECASTS
OFFICE AFB, OMAHA, NEBRASKA
THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	0	0	1	1	3
2	1	7	6	3	0	26
3	0	2	4	4	4	14
4	0	4	3	35	38	80
5	0	3	6	33	499	541
TOTAL	2	16	19	76	551	664

VERNON SKILL SCORE 0.46710

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	2	0	1	0	3
2	1	5	5	5	5	21
3	0	2	6	9	5	22
4	1	3	3	36	38	81
5	0	4	5	25	497	531
TOTAL	2	16	19	76	551	664

VERNON SKILL SCORE 0.57840

FORE-CAST	CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	0	0	0	1
2	7	3	6	5	12	29
3	0	5	4	3	2	14
4	0	4	3	35	38	80
5	0	3	6	33	499	541
TOTAL	2	16	19	76	551	664

VERNON SKILL SCORE 0.46501

FORE-CAST	GROUPING OBSERVED					TOTAL
	1	2	3	4	5	
1	2	1	0	2	1	6
2	0	0	0	0	0	0
3	0	8	0	3	12	32
4	0	1	1	4	1	7
5	0	6	0	67	537	610
TOTAL	2	16	19	76	551	664

VERNON SKILL SCORE 0.37573

FORE-CAST	LUND CONTINGENCY PROGNOSIS OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	2	5	10	6	11	34
3	0	4	0	0	22	26
4	0	5	5	39	75	124
5	0	7	4	22	443	476
TOTAL	2	16	19	76	551	664

VERNON SKILL SCORE 0.38586

FORE-CAST	MULTIPLE DISCRIMINANT ANALYSIS OBSERVED					TOTAL
	1	2	3	4	5	
1	1	0	0	1	1	3
2	0	8	9	7	2	26
3	1	4	0	16	9	30
4	0	1	5	18	17	41
5	0	3	5	34	522	564
TOTAL	2	16	19	76	551	664

VERNON SKILL SCORE 0.51037

VERIFICATION OF 2 HOUR VISIBILITY FORECASTS
 OFFICE AFB, DRAHA, NEBRASKA
 THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	3	0	0	0	0	3
2	0	4	0	1	3	8
3	0	3	6	4	4	17
4	0	0	4	6	8	22
5	2	1	7	10	624	644
TOTAL	5	8	21	21	639	694

VERNON SKILL SCORE 0.59014

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	3	0	0	0	1	4
2	0	0	0	1	0	1
3	0	5	5	5	6	21
4	0	3	7	8	14	32
5	2	0	9	7	618	636
TOTAL	5	8	21	21	639	694

VERNON SKILL SCORE 0.53195

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	3	0	0	0	0	3
2	0	4	0	0	2	6
3	0	3	6	5	5	19
4	0	0	8	6	8	22
5	2	1	7	10	624	644
TOTAL	5	8	21	21	639	694

VERNON SKILL SCORE 0.59667

GROUPING
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	2	0	0	0	0	2
2	0	2	0	0	1	3
3	1	3	8	6	6	24
4	0	2	5	4	6	17
5	2	1	8	11	624	640
TOTAL	5	8	21	21	639	694

VERNON SKILL SCORE 0.55780

LUND CONTINGENCY PRUGNOSIS
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	3	4	0	1	3	11
3	0	3	6	4	4	17
4	1	1	11	14	42	69
5	1	0	4	2	540	547
TOTAL	5	8	21	21	639	694

VERNON SKILL SCORE 0.55005

MULTIPLE DISCRIMINANT ANALYSIS
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	3	0	0	0	1	4
2	0	1	0	0	1	2
3	0	6	6	5	6	23
4	0	0	3	2	3	8
5	2	1	12	14	628	657
TOTAL	5	8	21	21	639	694

VERNON SKILL SCORE 0.51153

VERIFICATION OF 4 HOUR VISIBILITY FORECASTS
OFFUTT AFB, OMAHA, NEBRASKA
THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	3	0	0	0	0	3
2	1	1	0	0	4	6
3	0	1	7	6	4	18
4	0	1	4	5	12	22
5	0	2	7	19	616	644
TOTAL	4	3	18	30	636	693

VERNON SKILL SCORE 0.51308

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	2	0	0	0	0	2
2	1	0	2	0	0	3
3	1	1	3	5	11	21
4	0	4	4	6	16	30
5	0	0	9	19	609	637
TOTAL	4	5	18	30	636	693

VERNON SKILL SCORE 0.43875

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	3	0	0	0	0	3
2	1	1	0	0	2	4
3	0	1	6	6	3	16
4	0	1	4	4	14	23
5	0	2	8	20	617	647
TOTAL	4	5	18	30	636	693

VERNON SKILL SCORE 0.50728

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	0	0	0	0	1
2	1	1	0	0	2	4
3	2	1	6	6	8	23
4	0	1	3	3	9	16
5	0	2	9	21	617	649
TOTAL	4	5	18	30	636	693

VERNON SKILL SCORE 0.43786

CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	0	0	0	2	3
2	3	2	1	0	2	8
3	0	0	6	7	5	18
4	0	1	5	8	25	39
5	0	2	6	15	602	625
TOTAL	4	5	18	30	636	693

VERNON SKILL SCORE 0.48516

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	3	0	0	0	1	4
2	1	0	1	0	2	4
3	0	2	6	3	4	15
4	0	1	5	4	9	19
5	0	2	6	23	620	651
TOTAL	4	5	18	30	636	693

VERNON SKILL SCORE 0.50316

VERIFICATION OF 6 HOUR VISIBILITY FORECASTS
OFFUTT AFB, OMAHA, NEBRASKA
THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

PERSISTENCE							SUBJECTIVE						
OBSERVED							OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL	FORE-CAST	1	2	3	4	5	TOTAL
1	3	0	0	0	0	3	1	0	0	0	0	0	0
2	0	0	1	0	6	7	2	0	0	2	0	0	2
3	0	2	3	5	3	13	3	3	0	0	5	5	13
4	0	0	2	3	15	20	4	0	1	1	4	12	18
5	0	0	8	15	552	575	5	0	1	11	14	552	585
TOTAL	3	2	14	23	576	618	TOTAL	3	2	14	23	576	618
VERNON SKILL SCORE						0.43081	VERNON SKILL SCORE						0.22104

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE							GROUPING						
OBSERVED							OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL	FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0	1	3	0	0	0	1	4
2	3	0	1	0	4	8	2	0	0	0	1	0	1
3	0	2	2	6	7	17	3	0	1	2	2	12	17
4	0	0	1	2	9	12	4	0	0	2	5	11	18
5	0	0	10	15	556	581	5	0	1	10	15	552	578
TOTAL	3	2	14	23	576	618	TOTAL	3	2	14	23	576	618
VERNON SKILL SCORE						0.37266	VERNON SKILL SCORE						0.36885

LOW CONTINGENCY PROGNOSIS							MULTIPLE DISCRIMINANT ANALYSIS						
OBSERVED							OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL	FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0	1	2	0	0	0	0	2
2	3	2	4	5	9	23	2	1	1	0	1	4	7
3	0	0	3	10	57	70	3	0	1	3	5	7	11
4	0	0	0	0	0	0	4	0	0	3	1	17	21
5	0	0	7	8	510	525	5	0	0	8	16	553	577
TOTAL	3	2	14	23	576	618	TOTAL	3	2	14	23	576	618
VERNON SKILL SCORE						0.26717	VERNON SKILL SCORE						0.42551

VERIFICATION OF 2 HOUR CEILING FORECASTS
 RANDOLPH AFB, SAN ANTONIO, TEXAS
 THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE-CAST	PERSISTENCE					TOTAL
	OBSERVED					
	1	2	3	4	5	
1	4	2	4	1	0	11
2	0	4	7	2	1	14
3	0	6	74	27	16	123
4	0	0	14	52	18	84
5	0	2	14	19	425	460
TOTAL	4	14	113	101	460	692

VERNON SKILL SCORE 0.69897

FORE-CAST	SUBJECTIVE					TOTAL
	OBSERVED					
	1	2	3	4	5	
1	1	1	2	1	1	6
2	2	6	6	2	0	16
3	1	6	75	78	16	126
4	0	1	19	42	27	95
5	0	0	11	22	416	449
TOTAL	4	14	113	101	460	692

VERNON SKILL SCORE 0.68483

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	1	2	2	0	0	5
2	3	2	8	2	1	16
3	0	8	75	28	16	127
4	0	0	14	52	18	84
5	0	2	14	19	425	460
TOTAL	4	14	113	101	460	692

VERNON SKILL SCORE 0.69391

GROUPING

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	3	4	4	1	0	12
2	1	2	5	1	0	9
3	0	5	69	25	16	115
4	0	2	24	55	28	109
5	0	1	11	19	416	447
TOTAL	4	14	113	101	460	692

VERNON SKILL SCORE 0.68213

LUND CONTINGENCY PROGNOSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	4	2	4	1	0	11
2	0	4	8	2	1	15
3	0	6	72	28	16	122
4	0	0	15	51	31	97
5	0	2	14	19	412	447
TOTAL	4	14	113	101	460	692

VERNON SKILL SCORE 0.67465

MULTIPLE DISCRIMINANT ANALYSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	4	3	4	1	0	12
2	0	3	9	2	1	15
3	0	6	76	34	16	132
4	0	1	21	47	31	100
5	0	1	3	17	412	433
TOTAL	4	14	113	101	460	692

VERNON SKILL SCORE 0.69796

VERIFICATION OF 4 HOUR CEILING FORECASTS
 RANDOLPH AFB, SAN ANTONIO, TEXAS
 THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	5	4	2	1	11
2	0	2	3	0	2	13
3	0	3	39	29	49	120
4	0	1	11	40	26	78
5	0	0	18	35	405	458
TOTAL	0	10	81	106	483	680

VERNON SKILL SCORE 0.47846

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	0	0	0	0
2	0	2	5	1	0	8
3	0	6	45	24	7	82
4	0	1	14	48	47	115
5	0	1	12	33	429	475
TOTAL	0	10	81	106	483	680

VERNON SKILL SCORE 0.60908

CLIMATOLOGICAL EXPECTANCY OF PERSISTENCE
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	1	4	1	1	7
2	0	1	5	0	1	7
3	0	7	28	19	23	78
4	0	1	25	51	53	130
5	0	0	18	35	405	458
TOTAL	0	10	81	106	483	680

VERNON SKILL SCORE 0.48470

GROUPING
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	3	0	1	1	5
2	0	2	11	3	2	18
3	0	5	39	25	49	118
4	0	0	17	41	49	107
5	0	0	14	36	382	432
TOTAL	0	10	81	106	483	680

VERNON SKILL SCORE 0.45392

LUND CONTINGENCY PROGNOSIS
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	5	5	2	1	13
2	0	2	24	7	9	42
3	0	2	26	39	56	123
4	0	1	11	29	37	78
5	0	0	15	29	380	424
TOTAL	0	10	81	106	483	680

VERNON SKILL SCORE 0.41568

MULTIPLE DISCRIMINANT ANALYSIS
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	4	4	1	0	9
2	0	2	9	1	2	14
3	0	4	41	36	48	129
4	0	0	12	41	42	95
5	0	0	15	27	391	433
TOTAL	0	10	81	106	483	680

VERNON SKILL SCORE 0.44743

VERIFICATION OF 6 HOUR CEILING FORECASTS
 RANDOLPH AFB, SAN ANTONIO, TEXAS
 THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE-CAST	PERSISTENCE					TOTAL
	OBSERVED					
	1	2	3	4	5	
1	0	1	3	5	2	11
2	0	1	6	3	3	13
3	2	6	29	23	59	119
4	0	2	18	28	30	78
5	1	3	24	40	389	457
TOTAL	3	13	80	99	483	678

VERNON SKILL SCORE 0.34274

FORE-CAST	SUBJECTIVE					TOTAL
	OBSERVED					
	1	2	3	4	5	
1	0	0	0	1	0	1
2	1	2	6	1	0	10
3	1	7	48	21	26	103
4	0	1	17	38	38	96
5	1	3	7	38	419	468
TOTAL	3	13	80	99	483	678

VERNON SKILL SCORE 0.55726

CLIMATOLOGICAL EXPECTANCY OF PERSISTENCE

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	3	0	0	3
2	0	1	2	5	3	11
3	2	7	32	20	35	96
4	0	0	12	21	43	76
5	1	5	31	53	402	492
TOTAL	3	13	80	99	483	678

VERNON SKILL SCORE 0.34527

GROUPING

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	0	2	0	3
2	0	1	4	4	4	19
3	2	6	31	28	50	117
4	0	2	12	23	49	86
5	1	3	29	40	380	453
TOTAL	3	13	80	99	483	678

VERNON SKILL SCORE 0.33289

LONG CONTINGENCY PROGNOSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	2	5	8	4	19
2	2	4	15	4	12	37
3	1	2	20	22	65	110
4	0	2	18	32	43	95
5		3	22	33	359	417
TOTAL	3	13	80	99	483	678

VERNON SKILL SCORE 0.31374

MULTIPLE DISCRIMINANT ANALYSIS

FORE-CAST	OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	2	2	0	5
2	2	2	6	4	0	14
3	0	7	42	32	30	111
4	0	0	10	22	56	88
5	1	3	20	39	397	460
TOTAL	3	13	80	99	483	678

VERNON SKILL SCORE 0.45263

VERIFICATION OF 2 HOUR VISIBILITY FORECASTS
 RANDOLPH AFB, SAN ANTONIO, TEXAS
 THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	4	0	3	1	4	12
2	1	1	2	1	0	5
3	3	0	7	3	5	18
4	0	1	6	4	7	18
5	1	2	5	15	626	649
TOTAL	9	4	23	24	642	702

VERNON SKILL SCORE 0.55287

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	1	2	0	0	4
2	2	0	1	0	2	5
3	4	0	8	6	7	25
4	0	1	8	6	13	28
5	2	2	4	12	620	640
TOTAL	9	4	23	24	642	702

VERNON SKILL SCORE 0.53407

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	1	0	1	1	3	6
2	1	1	2	1	0	5
3	6	0	8	3	5	22
4	0	0	5	1	6	12
5	1	3	7	18	628	657
TOTAL	9	4	23	24	642	702

VERNON SKILL SCORE 0.48948

GROUPING
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	3	0	3	2	3	11
2	1	0	7	0	3	11
3	3	1	5	2	6	17
4	1	1	3	5	4	14
5	1	2	5	15	626	649
TOTAL	9	4	23	24	642	702

VERNON SKILL SCORE 0.52369

LOW CONTINGENCY PROGNOSIS
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	5	1	5	2	4	17
2	2	0	2	1	0	5
3	1	3	14	10	78	112
4	1	0	1	1	36	39
5	2	1	4	24	573	604
TOTAL	9	4	23	24	642	702

VERNON SKILL SCORE 0.37535

MULTIPLE DISCRIMINANT ANALYSIS
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	3	0	2	0	0	5
2	2	1	3	2	2	10
3	1	0	7	4	4	16
4	2	0	5	3	7	17
5	1	3	6	15	629	654
TOTAL	9	4	23	24	642	702

VERNON SKILL SCORE 0.55575

VERIFICATION OF 4 HOUR VISIBILITY FORECASTS
 RANDOLPH AFB, SAN ANTONIO, TEXAS
 THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

PERSISTENCE							SUBJECTIVE						
OBSERVED							OBSERVED						
FORE-CAST	1	2	3	4	5	TOTAL	FORE-CAST	1	2	3	4	5	TOTAL
1	1	0	2	1	8	12	1	0	0	0	0	0	0
2	0	0	2	0	3	5	2	0	0	0	0	1	1
3	0	0	4	3	8	15	3	0	0	7	4	5	16
4	0	0	4	2	12	18	4	0	0	4	3	13	20
5	0	0	7	8	617	632	5	1	0	8	7	629	645
TOTAL	1	0	19	14	648	682	TOTAL	1	0	19	14	646	682
VERNON SKILL SCORE						0.33147	VERNON SKILL SCORE						0.42621

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE							GROUPING								
OBSERVED							OBSERVED								
FORE-CAST	1	2	3	4	5	TOTAL	FORE-CAST	1	2	3	4	5	TOTAL		
1	0	0	0	1	0	1	1	1	0	1	0	5	7		
2	0	0	2	0	6	8	2	0	0	3	3	7	13		
3	0	0	5	1	5	11	3	0	0	5	2	19	26		
4	0	0	4	4	8	16	4	0	0	1	1	8	10		
5	1	0	8	8	629	646	5	0	0	9	8	609	626		
TOTAL	1	0	19	14	648	682	TOTAL	1	0	19	14	648	682		
VERNON SKILL SCORE							0.36864	VERNON SKILL SCORE							0.28102

LUND CONTINGENCY PROGNOSIS							MULTIPLE DISCRIMINANT ANALYSIS								
OBSERVED							OBSERVED								
FORE-CAST	1	2	3	4	5	TOTAL	FORE-CAST	1	2	3	4	5	TOTAL		
1	1	0	7	2	12	22	1	1	0	3	0	3	7		
2	0	0	4	5	47	56	2	0	0	2	2	4	8		
3	0	3	7	6	90	103	3	0	0	4	2	9	15		
4	0	0	0	0	0	0	4	0	0	5	7	24	36		
5	0	0	1	1	629	631	5	0	0	5	1	608	614		
TOTAL	1	0	19	14	648	682	TOTAL	1	0	19	14	648	682		
VERNON SKILL SCORE							0.17754	VERNON SKILL SCORE							0.40820

VERIFICATION OF 6 HOUR VISIBILITY FORECASTS
 RANDOLPH AFB, SAN ANTONIO, TEXAS
 THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE-CAST	PERSISTENCE					
	OBSERVED					
	1	2	3	4	5	TOTAL
1	0	0	2	3	7	12
2	0	0	2	0	3	5
3	0	1	0	1	13	15
4	0	0	0	2	16	18
5	1	1	10	10	610	632
TOTAL	1	2	14	16	649	682

VERNON SKILL SCORE 0.16025

FORE-CAST	SUBJECTIVE					
	OBSERVED					
	1	2	3	4	5	TOTAL
1	0	0	0	0	1	1
2	0	0	0	0	1	1
3	1	0	4	5	7	17
4	0	1	1	1	13	16
5	0	1	9	10	627	647
TOTAL	1	2	14	16	649	682

VERNON SKILL SCORE 0.29673

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE

FORE-CAST	OBSERVED					
	1	2	3	4	5	TOTAL
1	0	0	0	1	0	1
2	0	0	1	0	0	1
3	0	1	1	2	6	10
4	0	0	1	1	9	11
5	1	1	11	12	626	651
TOTAL	1	2	14	16	649	682

VERNON SKILL SCORE 0.16005

GROUPING

FORE-CAST	OBSERVED					
	1	2	3	4	5	TOTAL
1	0	0	3	3	12	18
2	0	0	0	1	9	10
3	1	1	0	4	19	24
4	0	0	5	1	11	17
5	1	1	6	7	598	613
TOTAL	1	2	14	16	649	682

VERNON SKILL SCORE 0.16285

LONG CONTINGENCY PROGNOSIS

FORE-CAST	OBSERVED					
	1	2	3	4	5	TOTAL
1	0	0	4	3	10	17
2	0	1	4	3	70	78
3	1	0	2	2	81	86
4	0	0	0	0	9	9
5	0	1	4	8	579	492
TOTAL	1	2	14	16	649	682

VERNON SKILL SCORE 0.07412

MULTIPLE DISCRIMINANT ANALYSIS

FORE-CAST	OBSERVED					
	1	2	3	4	5	TOTAL
1	0	0	1	2	1	4
2	0	0	1	1	3	5
3	0	1	6	0	12	19
4	1	0	2	4	19	26
5	0	1	4	9	614	628
TOTAL	1	2	14	16	649	682

VERNON SKILL SCORE 0.14639

VERIFICATION OF 2 HOUR CEILING FORECASTS
MCGUIRE AFB, WRIGHTSTOWN, N.J.
THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	8	3	1	0	1	13
2	3	13	3	2	0	21
3	0	5	22	6	3	36
4	0	1	9	29	25	64
5	3	1	4	29	440	477
TOTAL	14	23	39	66	469	611

VERNON SKILL SCORE 0.71533

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	5	1	1	0	4	11
2	3	10	5	0	2	20
3	2	11	16	6	6	43
4	0	1	13	33	23	70
5	4	0	4	25	434	467
TOTAL	14	23	39	66	469	611

VERNON SKILL SCORE 0.64725

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	4	1	1	0	0	6
2	7	15	3	2	1	28
3	0	5	22	6	3	36
4	0	1	9	29	25	64
5	3	1	4	29	440	477
TOTAL	14	23	39	66	469	611

VERNON SKILL SCORE 0.70856

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	3	1	0	1	13
2	3	13	5	2	0	23
3	0	5	25	8	3	41
4	0	1	6	34	26	67
5	3	1	2	22	439	467
TOTAL	14	23	39	66	469	611

VERNON SKILL SCORE 0.74328

LONG CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	11	17	11	4	2	45
3	4	4	17	12	6	39
4	0	0	5	15	8	28
5	3	2	6	35	453	499
TOTAL	14	23	39	66	469	611

VERNON SKILL SCORE 0.67094

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	8	3	0	1	0	12
2	7	12	5	0	1	20
3	2	6	24	8	3	43
4	0	1	7	29	16	53
5	7	1	3	28	449	483
TOTAL	14	23	39	66	469	611

VERNON SKILL SCORE 0.74620

VERIFICATION OF 4 HOUR CEILING FORECASTS
MCGUIRE AFB, WRIGHTSTOWN, N.J.
THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	4	2	0	3	9
2	0	8	7	2	1	18
3	1	2	16	4	4	27
4	0	5	6	16	29	56
5	0	1	7	27	374	409
TOTAL	1	20	36	49	411	519

VERNON SKILL SCORE 0.57715

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	3	0	0	2	5
2	1	4	4	1	1	11
3	0	7	14	9	5	35
4	0	2	9	23	28	62
5	0	4	11	16	375	406
TOTAL	1	20	38	49	411	519

VERNON SKILL SCORE 0.56360

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	1	0	0	1	2
2	0	8	5	0	3	16
3	1	5	20	6	4	36
4	0	5	6	16	29	56
5	0	1	7	27	374	409
TOTAL	1	20	38	49	411	519

VERNON SKILL SCORE 0.58849

GROUPING
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	4	2	0	1	7
2	0	8	6	1	2	17
3	1	4	18	6	6	35
4	0	3	6	17	28	54
5	0	1	6	25	374	406
TOTAL	1	20	38	49	411	519

VERNON SKILL SCORE 0.60557

LUND CONTINGENCY PROGNOSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	1	0	0	2	3
2	0	10	15	6	5	36
3	1	7	14	9	4	35
4	0	1	5	24	16	106
5	0	1	4	10	374	389
TOTAL	1	20	39	49	411	519

VERNON SKILL SCORE 0.53601

MULTIPLE DISCRIMINANT ANALYSIS
OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	3	1	0	1	5
2	1	6	3	1	1	14
3	0	9	19	12	6	45
4	0	1	6	14	9	30
5	0	2	7	22	394	425
TOTAL	1	20	38	49	411	519

VERNON SKILL SCORE 0.64848

VERIFICATION OF 6 HOUR CEILING FORECASTS
 MCQUIRE AFB, WRIGHTSTOWN, N.J.
 THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE- CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	0	3	0	6	9
2	2	2	6	6	2	18
3	1	6	4	7	6	24
4	1	5	9	14	23	56
5	1	2	5	32	168	404
TOTAL	5	15	31	63	405	519

VERNON SKILL SCORE 0.45463

FORE- CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	0	1	1	1	3	6
2	1	4	4	0	4	13
3	1	4	12	9	6	32
4	2	3	6	31	26	68
5	1	3	8	22	166	404
TOTAL	5	15	31	63	405	519

VERNON SKILL SCORE 0.52109

CLIMATOLOGICAL EFFICIENCY OF PERSISTENCE
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	1	0	1	2
2	3	4	5	2	2	16
3	0	4	11	11	11	37
4	1	5	7	14	23	56
5	1	2	5	32	168	404
TOTAL	5	15	31	63	405	519

VERNON SKILL SCORE 0.49662

GROUPING
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	2	0	2	4
2	1	1	2	2	4	10
3	1	1	5	3	7	17
4	1	7	13	28	48	97
5	2	6	9	30	144	391
TOTAL	5	15	31	63	405	519

VERNON SKILL SCORE 0.33118

LOW CONFIDENCE PROGNOSIS
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	3	2	4	4	56	71
2	2	2	4	5	4	25
3	1	3	11	13	11	44
4	2	7	5	14	30	51
5	2	3	3	20	100	128
TOTAL	5	15	31	63	405	519

VERNON SKILL SCORE 0.24624

MULTIPLE DISCRIMINANT ANALYSIS
 OBSERVED

FORE- CAST	1	2	3	4	5	TOTAL
1	0	0	0	0	0	0
2	1	7	12	4	4	28
3	2	4	8	4	5	28
4	1	2	6	23	24	56
5	1	2	5	27	172	407
TOTAL	5	15	31	63	405	519

VERNON SKILL SCORE 0.55505

VERIFICATION OF 2 HOUR VISIBILITY FORECASTS
MCGUIRE AFB, WRIGHTSTOWN, N.J.
THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	11	5	0	0	0	16
2	2	6	6	1	0	15
3	1	4	37	10	6	58
4	0	0	72	21	11	54
5	0	1	15	22	431	469
TOTAL	14	16	80	54	448	612

VERNON SKILL SCORE 0.72967

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	6	5	3	0	0	14
2	3	2	7	1	2	15
3	2	7	41	14	9	73
4	2	0	20	25	31	78
5	1	2	9	14	406	432
TOTAL	14	16	80	54	448	612

VERNON SKILL SCORE 0.66231

FORE-CAST	CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	11	5	0	0	0	16
2	1	4	4	1	0	10
3	2	6	39	10	6	63
4	0	0	22	21	11	54
5	0	1	15	22	431	469
TOTAL	14	16	80	54	448	612

VERNON SKILL SCORE 0.72505

FORE-CAST	GROUPING OBSERVED					TOTAL
	1	2	3	4	5	
1	12	7	0	0	0	19
2	1	3	11	2	1	18
3	1	5	34	13	9	62
4	0	0	24	20	8	52
5	0	1	11	19	430	461
TOTAL	14	16	80	54	448	612

VERNON SKILL SCORE 0.72166

FORE-CAST	LUND CONTINGENCY PROGNOSIS OBSERVED					TOTAL
	1	2	3	4	5	
1	10	6	1	0	0	17
2	3	5	7	2	0	17
3	1	4	41	16	15	72
4	0	0	16	16	16	48
5	0	1	15	20	417	453
TOTAL	14	16	80	54	448	612

VERNON SKILL SCORE 0.68810

FORE-CAST	MULTIPLE DISCRIMINANT ANALYSIS OBSERVED					TOTAL
	1	2	3	4	5	
1	9	8	2	0	0	19
2	4	2	7	1	0	14
3	1	5	44	15	7	72
4	0	1	18	23	21	63
5	0	0	9	15	420	444
TOTAL	14	16	80	54	448	612

VERNON SKILL SCORE 0.73517

VERIFICATION OF 4 HOUR VISIBILITY FORECASTS
 MC GUIRE AFB, WRIGHTSTOWN, N.J.
 THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE-CAST	PERSISTENCE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	1	7	2	1	12
2	1	3	4	3	2	13
3	0	0	19	14	14	47
4	1	0	13	11	23	48
5	0	3	9	27	355	394
TOTAL	3	7	52	57	395	514

VERNON SKILL SCORE 0.49277

FORE-CAST	SUBJECTIVE OBSERVED					TOTAL
	1	2	3	4	5	
1	1	1	1	1	1	5
2	0	0		1	3	4
3	1	2	18	6	9	36
4	1	1	20	18	34	74
5	0	3	9	29	348	389
TOTAL	3	7	52	57	395	514

VERNON SKILL SCORE 0.46415

CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	0	0	2	0	1	3
2	2	3	11	4	3	23
3	0	1	20	16	20	57
4	1	0	10	10	16	37
5	0	3	9	27	355	394
TOTAL	3	7	52	57	395	514

VERNON SKILL SCORE 0.49051

GROUPING
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	1	2	6	2	1	14
2	1	2	2	4	3	12
3	1	0	17	10	13	41
4	0	0	13	11	15	39
5	0	3	12	30	343	408
TOTAL	3	7	52	57	395	514

VERNON SKILL SCORE 0.48030

LONG CONTINGENCY PROGNOSIS
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	1	1	6	1	1	10
2	1	3	5	2	4	15
3	1	0	21	22	24	68
4	0	0	14	13	25	52
5	0	3	6	19	341	369
TOTAL	3	7	52	57	395	514

VERNON SKILL SCORE 0.48716

MULTIPLE DISCRIMINANT ANALYSIS
 OBSERVED

FORE-CAST	1	2	3	4	5	TOTAL
1	2	1	8	2	1	14
2	0	3	3	3	1	10
3	1	0	24	14	18	62
4	0	0	9	17	27	53
5	0	3	8	16	348	375
TOTAL	3	7	52	57	395	514

VERNON SKILL SCORE 0.43343

VERIFICATION OF 6 HOUR VISIBILITY FORECASTS
MCGUIRE AFB, BRIGHTSTOWN, N.J.
THE VERIFICATION CRITERION IS THE VERNON SKILL SCORE

FORE-CAST	PERSISTENCE OBSERVED					
	1	2	3	4	5	TOTAL
1	0	1	3	3	5	12
2	1	1	4	3	4	13
3	1	1	12	17	21	47
4	2	0	7	16	23	48
5	1	1	11	19	365	397
TOTAL	5	4	37	53	418	517

VERNON SKILL SCORE 0.37048

FORE-CAST	SUBJECTIVE OBSERVED					
	1	2	3	4	5	TOTAL
1	0	1	2	1	1	5
2	1	1	4	0	3	9
3	2	1	6	4	9	22
4	0	1	13	17	36	67
5	2	0	12	31	369	414
TOTAL	5	4	37	53	418	517

VERNON SKILL SCORE 0.38277

FORE-CAST	CLIMATOLOGICAL EXPECTENCY OF PERSISTENCE OBSERVED					
	1	2	3	4	5	TOTAL
1	0	1	1	0	1	3
2	2	1	6	3	2	14
3	2	1	12	14	16	45
4	3	0	7	17	34	58
5	1	1	11	19	365	397
TOTAL	5	4	37	53	418	517

VERNON SKILL SCORE 0.44950

FORE-CAST	GROUPING OBSERVED					
	1	2	3	4	5	TOTAL
1	0	1	1	2	5	9
2	1	0	4	2	12	20
3	0	2	13	12	19	46
4	3	0	10	15	35	63
5	1	1	9	21	347	379
TOTAL	5	4	37	53	418	517

VERNON SKILL SCORE 0.33454

FORE-CAST	LUND CONTINGENCY PROGNOSIS OBSERVED					
	1	2	3	4	5	TOTAL
1	0	1	2	2	2	7
2	2	0	7	6	11	26
3	2	1	18	26	56	105
4	0	0	1	10	46	57
5	1	0	8	9	303	322
TOTAL	5	4	37	53	418	517

VERNON SKILL SCORE 0.31399

FORE-CAST	MULTIPLE DISCRIMINANT ANALYSIS OBSERVED					
	1	2	3	4	5	TOTAL
1	0	1	5	1	4	11
2	2	2	6	4	4	18
3	1	0	12	26	35	74
4	1	0	9	11	19	60
5	1	1	5	11	336	354
TOTAL	5	4	37	53	418	517

VERNON SKILL SCORE 0.38646

APPENDIX D
WEATHER BUREAU WEIGHT FUNCTION
February 28, 1963

APPENDIX D. WEATHER BUREAU WEIGHT FUNCTION*

D.1 Introduction

The Federal Aviation Agency requested suggestions on the evaluation works. The U.S. Weather Bureau, in response, furnished a weight function and requested that it be used to evaluate some of the 2-7-hr ceiling and visibility forecasts. The weights are given in Table D-1. The procedure followed was the same as that used for the three types of weight function discussed in Section 2.0. The verification score is obtained in a manner entirely analagous to that used to obtain the Bryan score.† Only three forecast techniques were considered: persistence, subjective categorical, and multiple-discriminant analysis.

*Isadore Enger and Ann L. Bussemey, Feb. 28, 1963.

†See Section 2.4.6.3 of Enger, I., L. J. Reed, and J. E. MacMonegle, An Evaluation of 2-7-hr Aviation Terminal-forecasting Techniques, 38 pp. Tech. Rpt. 7044-40, The Travelers Research Center, Inc., Hartford, Oct. 1962.

TABLE D-1
PATTERN OF MERITS

Class		Observed (j)				
		1	2	3	4	5
Forecast (i)	1	10.0	7.0	2.0	0.0	0.0
	2	6.0	9.0	5.0	1.0	0.0
	3	1.0	4.0	7.0	3.0	0.5
	4	0.0	0.5	2.0	4.5	1.0
	5	0.0	0.0	0.0	1.0	1.5

D.2 Verification Results

For a single forecast, the verification score is

$$SG = W_{ij}, \quad (D-1)$$

where W_{ij} is the merit ascribed to forecast category i when category j occurs.

The W -values are the merits listed in Table D-1.

Mean SG-scores are given in Table D-2. Examination of Table D-2 shows that the multiple-discriminant-analysis (MDA) technique yielded the highest scores on 31 of the 42 predictands, subjective was high on seven predictands, persistence on three, and there was one tie. The "average-over-station" mean SG-scores in Table D-2 show that the MDA technique gave higher scores for all three forecast lengths for both ceiling and visibility forecasts. The scores were averaged by station, and the results (not shown here) indicate that MDA yielded higher scores at all stations except Atlantic City, where subjective scores were highest.

The paired-comparison t -values are given in Table D-3. This table shows that the mean SG-scores achieved by MDA were statistically significantly higher than the mean scores achieved by the persistence technique beyond the 5% level on 29 of the 42 predictands. Similarly, subjective mean scores were higher than persistence on 13 predictands. The t -test probabilities were combined by Fisher's method* to obtain a single significance test for all 42 predictands. The MDA scores were significantly higher than both the subjective and persistence scores beyond the 1% level of significance.

Values of the index I were computed for the "average-over-station" SG-scores of Table D-2 and are presented in Table D-4. This table shows that, relative to persistence, the MDA technique achieved a percentage increase ranging from 15.1 to 20.7 for ceiling and 9.8 to 17.9 for visibility. The subjective technique achieved increases of -3.0 to 20.5 for ceiling and -1.5 to 4.6 for visibility.

*Fisher, R. A., Statistical Methods for Research Workers. 11th ed., pp. 99-101. New York: Hafner Publishing Co., 1950.

TABLE D-2
VERIFICATION SCORES ON EVALUATION-YEAR DATA
COMPUTED WITH GAIN MATRIX FURNISHED BY ROGER ALLEN

(a) Predictand element is ceiling

Predictand		No. of fcsts	Verification score (SG)		
Sta	Fcst length, hr		Pers	Subj	MDA
ACY	3	729	1.908	1.944	1.970
CEF	2	729	2.287	2.316	2.436
DCA	3	607	1.694	1.699	1.711
IDL	3	1,451	1.976	1.960	2.023
OFF	2	712	2.052	2.000	2.069
RND	2	716	2.475	2.446	2.571
WRI	2	611	2.146	2.047	2.254
Mean	2-3	5,555	2.077	2.063	2.148
ACY	5	729	1.740	1.842	1.789
CEF	4	725	2.083	2.036	2.179
DCA	5	609	1.608	1.641	1.662
IDL	5	1,452	1.848	1.843	1.911
OFF	4	724	1.819	1.874	1.907
RND	4	716	2.013	2.105	2.144
WRI	4	519	1.887	1.866	2.028
Mean	4-5	5,474	1.857	1.887	1.946
ACY	7	727	1.644	1.797	1.746
CEF	6	724	1.855	2.057	2.077
DCA	7	728	1.551	1.636	1.679
IDL	7	1,452	1.703	1.819	1.774
OFF	6	723	1.726	1.755	1.795
RND	6	714	1.772	2.118	2.059
WRI	6	519	1.706	1.834	1.891
Mean	6-7	5,587	1.708	1.859	1.860

(b) Predictand element is visibility

Predictand		No. of fcsts	Verification score (GG)		
Sta	Fcst length, hr		Pers	Subj	MDA
ACY	3	729	1.656	1.637	1.634
CEF	2	727	1.982	2.107	2.283
DCA	3	728	1.534	1.515	1.564
IDL	3	1,452	1.642	1.674	1.703
CFF	2	719	1.646	1.586	1.664
RND	2	716	1.614	1.584	1.654
WRI	2	612	2.237	2.194	2.401
Mean	2-3	5,683	1.759	1.757	1.843
ACY	5	729	1.486	1.606	1.465
CEF	4	725	1.857	1.829	1.986
DCA	5	725	1.479	1.466	1.488
IDL	5	1,453	1.544	1.559	1.570
CFF	4	711	1.605	1.539	1.652
RND	4	717	1.512	1.524	1.537
WRI	4	603	1.832	1.740	2.031
Mean	4-5	5,663	1.616	1.609	1.676
ACY	7	727	1.417	1.537	1.485
CEF	6	724	1.650	1.657	1.729
DCA	7	728	1.471	1.462	1.453
IDL	7	1,452	1.469	1.561	1.518
OFF	6	713	1.540	1.479	1.532
RND	6	717	1.439	1.499	1.490
WRI	6	606	1.686	1.642	1.799
Mean	6-7	5,667	1.525	1.548	1.574

(c) Composite of (a) and (b) for all stations and forecasts

No. of fcsts	Mean verification score		
	Pers	Subj	MDA
33,629	1.757	1.787	1.841

TABLE D-3
t-VALUES COMPARING THE MEAN SG-SCORES FOR CATEGORICAL
FORECASTS FOR EVALUATION-YEAR DATA

(a) Predictand element is ceiling

Predictand		No. of fcsts	t-value		
Sta	Fcst length, hr		Subj Pers	MDA Pers	MDA Subj
ACY	3	729	0.817	1.863*	0.557
CEF	2	729	0.491	3.079†	2.262*
DCA	3	607	0.157	0.582	0.344
IDL	3	1,451	-0.436	2.394†	1.872*
OFF	2	712	-1.240	0.675	1.657*
RND	2	716	-0.526	2.047*	2.126*
WRI	2	611	-1.761	2.541†	3.589†
ACY	5	729	2.239*	1.316	-1.186
CEF	4	725	-0.912	2.221*	2.780†
DCA	5	609	0.940	1.763*	0.647
IDL	5	1,452	-0.130	2.667†	1.921*
OFF	4	724	1.283	2.414†	0.868
RND	4	716	1.646	2.887†	0.675
WRI	4	519	-0.383	2.980†	2.744†
ACY	7	727	2.977†	2.240*	-1.073
CEF	6	724	3.647†	4.817†	0.361
DCA	7	728	2.005*	3.413†	1.163
IDL	7	1,452	2.691†	2.213*	-1.144
OFF	6	723	0.659	1.679*	0.953
RND	6	714	4.988†	4.802†	-1.017
WRI	6	519	2.421†	3.447†	1.023

(b) Predictand element is visibility

Predictand		No. of fcsts	t-value		
Sta	Fcst length, hr		Subj Pers	MDA Pers	MDA Subj
ACY	3	729	-0.401	-0.716	-0.055
CEF	2	727	2.100*	5.346†	3.443†
DCA	3	728	-0.537	1.521	1.432
IDL	3	1,452	0.963	2.550†	0.888
OFF	2	719	-1.900	0.781	2.354†
RND	2	716	-0.842	1.577	2.175*
WRI	2	612	-0.638	3.097†	3.354†
ACY	5	729	3.135†	-0.795	-3.666
CEF	4	725	-0.591	2.746†	2.803†
DCA	5	725	-0.540	0.561	0.964
IDL	5	1,453	0.451	1.022	0.340
OFF	4	711	-2.112	1.882*	3.022†
RND	4	717	0.366	0.852	0.389
WRI	4	603	-1.464	3.804†	4.486†
ACY	7	727	3.232†	1.874*	-1.333
CEF	6	724	0.153	1.713*	1.254
DCA	7	728	-0.402	-1.038*	-0.418
IDL	7	1,452	2.669†	1.862*	-1.206
OFF	6	713	-2.023	-0.293	1.541
RND	6	717	2.487†	2.268*	0.000
WRI	6	606	-0.806	2.062*	2.556†

*The mean SG-score for the first technique is significantly higher than the mean score for the second technique at the 5% level.

†The mean SG-score for the first technique is significantly higher than the mean score for the second technique at the 1% level.

Finally, the mean scores for all 42 predictands given at the bottom of Table D-2 show that the MDA score was higher than the subjective score by an amount almost twice the amount that the subjective score was higher than the persistence score.

TABLE D-4
PERCENT IMPROVEMENT (I) OF GAIN-FUNCTION
SCORES FOR CATEGORICAL FORECASTS RELATIVE
TO PERSISTENCE FOR EVALUATION-YEAR DATA

Predictand		I, %	
Elem	Fcst length, hr	Subj	MDA
CIG	2-3	-3.0	15.1
	4-5	5.1	15.1
	6-7	20.5	20.7
VIS	2-3	-0.4	17.9
	4-5	-1.5	12.7
	6-7	4.6	9.8