Research Note 83-18

Evaluating the Effectiveness of Military Decision Support Systems: Theoretical Foundations, Expert System Design, and Experimental Plan

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BASIC RESEARCH

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The main objective of this program is to construct a flexible test bed for the evaluation of the effectiveness of computer-based expert systems in military training and planning.

The technical approach consists of simulating the characteristics of expert systems in a game-like environment. Such characteristics include (1) friendly and English-like (stylized) dialogue, (2) system explanations of rationale about decision recommendations, (3) an ability to make (Continued)

Item 20 (continued)

relevant suggestions and comments about situation assessments and about plans proposed by the user, and (4) the use of high level strategic concepts and terminology.

The required software for such a program includes (1) a game environment simulator, (2) a simulated expert system for the game, and (3) an evaluation program for recording execution histories and for summarization. The game simulator will contain provisions for the experimenter to adjust critical parameters so that a controlled environment can be maintained. The expert system will monitor the progress of the game and can be interrogated as the user sees fit. A facility will also be provided for evaluating the user's performance under different modes of consultation with the expert system.

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The main objective of this program is to construct a flexible testbed for the evaluation of the effectiveness of computer-based expert systems in military training and planning.

1.2 Approach

The technical approach consists of simulating the characteristics of expert systems in a game-like environment. Such characteristics include (1) friendly system user interaction, (2) system explanations of rationale about decision recommendations, (3) an ability to make relevant suggestions and comments about situation assessments and about plans proposed by the user, and (4) the use of high-level strategic concepts and terminology.

The required software for such a program includes (1) a game environment simulator called the "Scenario Generator", (2) a simulated expert system for the game called the "Expert Aid", (3) an Optimality Algorithm for computing the best decisions in any situation, and (4) an Evaluation Module for recording execution histories and performance parameters. The expert system will monitor the progress of the game and can be interrogated as the user sees fit. A facility will also be provided for evaluating the user's performance under different modes of consultation with the expert system.

1.3 Progress

To date, the following progress has been made on the design and implementation of the expert system.

(1) Design of the Scenario Generator.

(2) Prototype implementation of the Scenario Generator game for testing purposes.

(3) Completion of the Optimality Algorithm Design.

(4) Implementation and execution of Optimality Algorithm resulting in a set of optimal decision tables.

(5) Design of the Expert System and integration into the existing Scenario Generator.

(6) Design of the Experimental Plan.

Plans for project continuation include the following major tasks.

(1) Implementation of the full expert system including system explanations of recommendations.

(2) Implementation and integration of the Evaluation Module for measuring user performance.

(3) Completion of the evaluation experiments.

II. THEORETICAL FOUNDATIONS

2.1 Expert Systems with Ground Truth

In a problem environment involving multiple decision points, "ground truth" is a complete description of the optimal strategy for all possible situations the decision maker may encounter. These optimal decisions must be identifiable by computation and must not be dependent upon the judgment of humans regardless of their expertise. An expert system, armed with ground truth, could make perfect recommendations to the decision maker at all times. If the environment contains uncertain events, the ground truth can be accurate only up to the highest expected utility. That is, ground truth may not guarantee successful outcomes; it just means that no other decision strategy could produce better performance in the long run.

Ground truth, then, is a property of the environment and not of the expert system. Most expert systems do not have built-in ground truth. Their recommendations are based on human knowledge and experience encoded as rules. The reason for this is obvious. Any environment complex enough to warrent the construction of an expert system is usually too complex to compute ground truth. However, the existence of ground truth permits the calibration of performance measures in expert system evaluation. Learning curves for new users could be generated by comparing decision performance with and without the recommendations of the expert system, but the results would be unreliable since the user's expertise continuously increases simply from contact with the environment. On the other hand, ground truth provides an upper bound on performance and a standard against which performance can be measured. In an environment containing uncertain events, evaluation without ground truth must rely on the outcomes of the decisions rather than on the quality of the decisions themselves. The results would then be clouded by the random processes within the environment. With ground truth as a standard, precise measurements of decision performance can be attained regardless of the outcomes of the experiments.

2.2 Scenario Generator Requirements

The task, then, is to devise a decision environment which is complex enough to be challenging to a decision maker and, yet, simple enough to permit the calculation of ground truth. These objectives lead to the following requirements for the expert system testbed Scenario Generator.

(1) Environment complex enough to be challenging to a decision maker.
(2) Environment simple enough to calculate ground truth.
(3) Environment amenable to the construction of and use of an expert system for decision recommendations.
(4) Environment containing uncertain events.
(5) Environment containing information feedback during the decision process.
(6) Environment within the military domain and which embodies a military decision problem.

Since uncertain events and information feedback are common elements of decision environments, their inclusion in the Scenario Generator is important for the transfer of evaluation results to real-world expert systems.

The selected environment that satisfies the above criteria is a military decision game. An expert system designed around a game would provide recommendations about the best "moves" in different situations. Ground truth can be established (if the game is not too complex) since the criteria for winning and losing are specified precisely in the rules. The only disadvantage is that games are not generally very realistic. However, as will be shown in the next section, a methodology can be described which will permit the construction of a ground truth expert system in any environment. The experimental results will then be transferrable.

2.3 The General Model

The scenario game environment is founded upon a general model for a class of ground truth expert systems. The major components of the model that characterize the environment are:

(1) Well-defined decision points with all choice options specified in advance.
(2) Well-defined event points with all outcomes and associated probabilities specified.

(3) Well-defined information feedback points with all possible combinations of "reports" specified.

Figure 1 shows notational symbols for each of the components: decision points, event points, and report points. An "identification point" is a place during the decision process where an important observation is made when it does not coincide with one of the other components. By connecting symbols together to form a tree, a class of decision environments can be constructed which leads directly to the design of the ground truth expert system.

A complete decision structure should have the following characteristics.

(1) Start with a decision point.

(2) Possess normalized probabilities on each branch leading out from an event point.

(3) Possess utility values on every termination branch.

Once built, the decision structure dictates the procedure for calculating the ground truth. At every decision point, the value of the decision (for all possible situations) is equal to the maximum of the values on its branches. At every event point, the value of the event is equal to the expected value of the utilities and probabilities on its branches. At every report point, the utility of the information is equal to the utility of its branch given the probability of the report. Thus, decision utilities are calculated by a "rollback" procedure that begins at the terminal branches and ends at the initial decision point. These calculations must be performed for every combination of decision situation and every combination of report outcome. In other words, a single

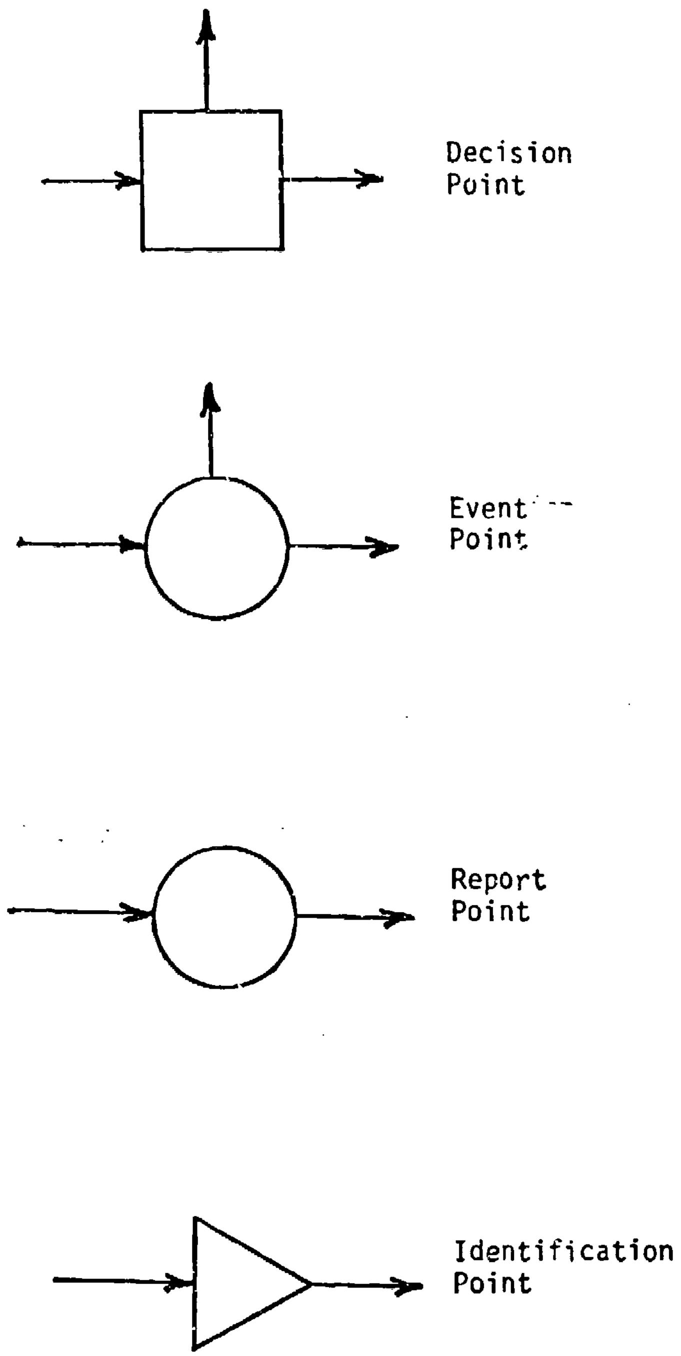

Figure 1. Decision Diagram Elements

tree diagram shows the sequential decisions that must be made, but the decision maker could be faced with the sequence over and over again in a repetitive environment in which situational parameters (such as resources, etc.) are different each time. This leads to a complex series of matrices necessary to rollback the utility values and calculate the optimal decisions at every decision point. The "Military Breakthrough" game, designed as an experimental testbed, satisfies the requirements of the general model and illustrates how these utility calculations are made and how they lead to the construction of the corresponding expert system.

III. THE EXPERT SYSTEM

3.1 Optimal Decision Tables

The 140 decision tables provide the optimal decisions for any situation encountered in the simulation game. Appendix B contains a complete listing of all tables arranged on 28 pages: one page for each combination of enemy line (1-4) and enemy encampment (1-7). Five tables are associated with each situation.

Table 1: Attack/Continue/Shallow/Deep
Table 2: Attack/Continue given Shallow, not detected
Table 3: Attack/Continue given Shallow, detected
Table 4: Attack/Continue given Deep, not detected
Table 5: Attack/Continue given Deep, detected

Table 1 is used when the player encounters a new enemy encampment and is faced with the decision of whether or not to send out reconnaissance (See Figure 2). If reconnaissance is chosen, a secondary decision is required to determine the type: shallow (S) or deep (D). However, if the player decides not to send reconnaissance, he is left with the decision to immediately attack (A) or continue (C) to the next enemy position. The optimal decisions for these 4 choices appear in Table 1.

The actual optimal decision depends upon 3 factors: (1) the current position, (2) the current strength of the friendly forces, and (3) the first report (X1) received by the player on the status of the strength of the enemy forces. Thus, decision Table 1 on each of the 28 pages in the listing in the Appendix is 12x64 in size, one row for each of the 12 possible friendly force combinations and one column for each of the 64 possible X1 reports. The last line, showing a friendly force of zero, is omitted since the game would be over and no further decisions could be made.

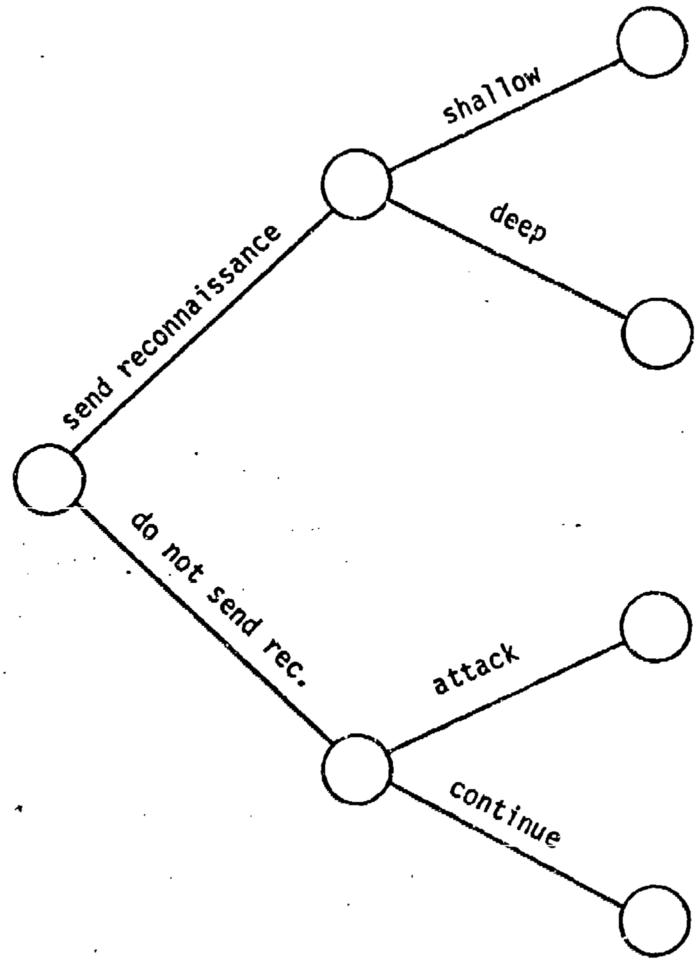

Figure 2. Table 1 Decisions

For example, if the player is facing enemy line #1 and enemy encampment #3 with a force of MHH (meduim strength artillery, high strength infantry, and high strength tanks) and observes that the report for the enemy strength is NNL (nil, nil, low reading from top-to-bottom), the optimal decision would be "D", ("take Deep reconnaissance").

Tables 2 and 3 are used only when the player has chosen shallow (S) reconnaissance for the initial decision (Table 1). Table 2 is used if the reconnaissance force is not detected and Table 3 is used if the force is detected. For these two tables, only the decisions of attacking (A) or continuing (C) are relevant. The column labels at the top of the page still apply, but now represent the outcome of report X2, a more accurate portrayal of the true enemy strength. Some of the entries in Tables 2 and 3 are missing since these particular combinations are impossible for report X2.

Tables 4 and 5 at the bottom of each page are used if deep (D) reconnaissance is made for the initial decision in Table 1. Again, two tables are required, Table 4 for "not detected" and Table 5 for "detected". In these cases, however, only 4 columns are necessary since the true enemy strength is known to the player at this time (as the result of report X3) and can be only 1 of 4 possible combinations.

Thus, as can be seen in Figure 3, S and D are intermediate decision points whereas A and C are final decision points. Numbers inside circles refer to the Tables used.

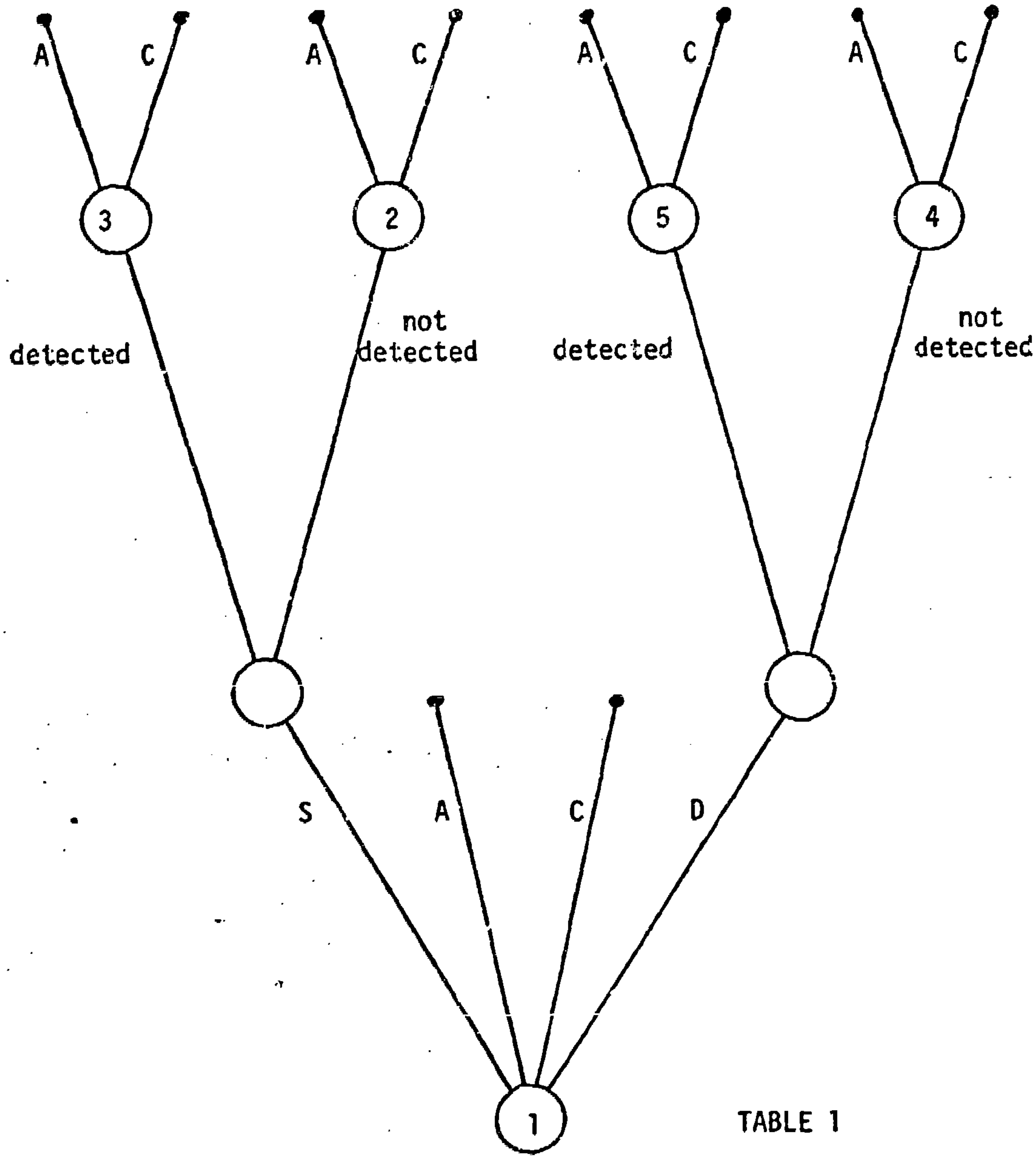

Figure 3. Player Decisions

3.2 Expert Rule Formation

An expert system, which had access to all 140 decision tables, could give optimal recommendations for every encountered situation. However, such information may not be the most valuable to a user. One of the purposes of an expert system is to teach the human user enough about the characteristics of the application environment so that he acquires some expertise. As they now exist, the decision tables are far too complex to learn, especially by point recommendations as individual situations are encountered during simulation exercises.

A more useful set of recommendations would be based on general rules that capture most, but not necessarily all of the optimal decisions. By observing the optimal tables listed in Appendix B, it is clear that most of the decisions fall into clusters. Thus, an expert system "rule" can be defined as a single recommended decision which represents the majority of optimal decisions within a specified region of the decision space.

The accuracy of the expert system will ultimately depend upon the uniformity of decisions within selected clusters. The accuracy can, thus, be calculated precisely. It is simply the total percentage of correctly classified decision points. The clusters should be chosen in such a way to produce high accuracy while reducing the cognitive complexity associated with learning the rules.

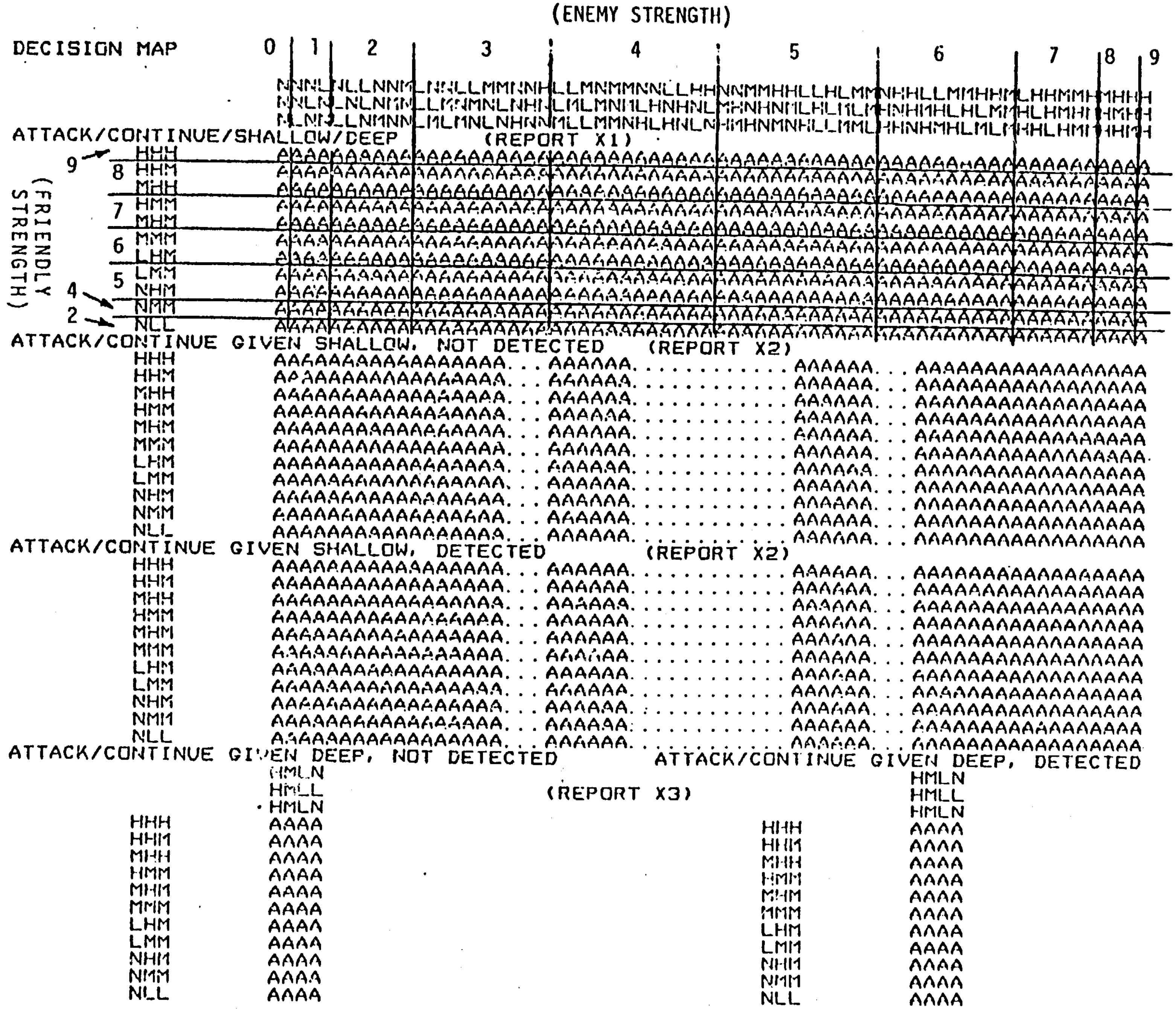

Figure 4. Decision Table Clusters

3.3 Expert Rules for the Simulation Game

The decisions for a single table are composed of a number of connected rules, one rule for each rectangular region. Figure 5 shows the divisions for encampment #3 in enemy line #3. Table 1 has 3 distinct rectangular clusters and 1 non-rectangular region covering the remainder of the table. To specify the rules, only the bounderies for the columns and rows are necessary. Thus, the upper left-hand cluster (with mostly A's) falls between 0 and 2 in enemy strength and between 7 and 9 in friendly strength. A set of 3 rules would be required to completely describe Table 1. The following form shows this specification using "E" for the enemy strength and "F" for the friendly strength.

RULE #	≤	E ≤	≤	F ≤	DO	ELSE
1	0	2	7	9	A	2
2	0	3	5	5	A	3
3	0	9	0	4	S	D

The above description can be read as follows:

(1) If the enemy strength is between 0 and 2 and the friendly strength is between 7 and 9, attack (A), otherwise follow Rule 2.

(2) If the enemy strength is between 0 and 3 and the friendly strength is equal to 5, attack, otherwise follow Rule 3.

(3) If the enemy strength is between 0 and 9 and the friendly strength is between 0 and 4, send shallow reconnaissance (S), otherwise send deep reconnaissance (D).

The last decision recommendation in the last rule (D) covers the non-rectangular portion of the table.

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OPTIMALITY March 6, 1982

DECISION MAP        ENEMY LINE 3        ENCAMPMENT 3        (I=2, J=5)
                           2        3        4
                    NNNLNLLNNMLNNLLMMNNHLLMNMMNNLLHHNNMMHHLLHLMMNHHLLMMHHMLHHMMHMHHH
                    NNLNLNLNMNLLMNMNLNHNLMLMNMLHNHNLMHNHNMLHLMLMHNHMHLHLMMHLHMHMHMHH
                    NLNNLLNMNNLMLMNLNHNNMLLMMNHLHNLNHMHNMNHLLMMLHHNHMHLMLMHHLHMMHHMH
ATTACK/CONTINUE/SHALLOW/DEEP           (REPORT X1)
       HHH          AAAAADADADCDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
       HHM          AAAAAAAAAADDADADDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
       MHH          AAAAAAAAAADDADADDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
       HMM          AAAAADADADDDDDDDDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
  7    MHM          AAAAADADADDDDDDDDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
       MMM          ADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSDSDDDS
  6    LHM          ADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSDSDDDS
       LMM          AAAAAAAAAAAAAAAAADADDDDDDDADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
  5    NHM          AAAAAAAAAAAAAAAAADADDDDDDDADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
       NMM          AAAAASASASSSASASSSASSSSSDSSSSSSSSSSSSSSSSDDDSSSSDSDSSDSSSSDSSSSS
       NLL          SDSDSDSSDSDDSDSDDDSDDDDDDDSDSDSSSSSSSSSDSDDDSSSSDSDSSDSSSDDSDDDS
ATTACK/CONTINUE GIVEN SHALLOW, NOT DETECTED     (REPORT X2)
       HHH          AAAAAAAAAACAAAAAA...CCCAAA............CCCCCC...CCCCCCCCCCCCCCCCC
       HHM          AAAAAAAAAAAAAAAAA...CACAAA............CCCCCC...CCCCCCCCCCCCCCCCC
       MHH          AAAAAAAAAAAAAAAAA...CACAAA............CCCCCC...CCCCCCCCCCCCCCCCC
       HMM          AAAAAAACACACACACC...CACCCC............CCCCCC...CCCCCCCCCCCCCCCCC
       MHM          AAAAAAACACACACACC...CACCCC............CCCCCC...CCCCCCCCCCCCCCCCC
       MMM          AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
       LHM          AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
       LMM          AAAAAAAAAAAAAAAAA...CACAAA............CCCCCC...CCCCCCCCCCCCCCCCC
       NHM          AAAAAAAAAAAAAAAAA...CACAAA............CCCCCC...CCCCCCCCCCCCCCCCC
       NMM          AAAA AACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
       NLL          CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN SHALLOW, DETECTED         (REPORT X2)
       HHH          AAAAAAAAAACAAAAAA...CCCAAA............CCCCCC...CCCCCCCCCCCCCCCCC
       HHM          AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
       MHH          AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
       HMM          AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
       MHM          AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
       MMM          AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
       LHM          AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
       LMM          CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
       NHM          CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
       NMM          CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
       NLL          CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN DEEP, NOT DETECTED    ATTACK/CONTINUE GIVEN DEEP, DETECTED
                    HMLN                                              HMLN
                    HMLL               (REPORT X3)                    HMLL
                    HMLN                                              HMLN
       HHH          CCAA                                  HHH         CCAA
       HHM          CCAA                                  HHM         CCCA
       MHH          CCAA                                  MHH         CCCA
       HMM          CCCA                                  HMM         CCCA
       MHM          CCCA                                  MHM         CCCA
       MMM          CCCA                                  MMM         CCCA
       LHM          CCCA                                  LHM         CCCA
       LMM          CCAA                                  LMM         CCCA
       NHM          CCAA                                  NHM         CCCA
       NMM          CCCA                                  NMM         CCCA
       NLL          CCCC                                  NLL         CCCC
```

Figure 5. Example Clustering

Obviously, the accuracy of the resulting rules depends on the accuracy of the individual regions. For the example table described above, the accuracy of the rules is shown in the following chart.

Region	Correct	Total	% Correct	Decision
1	41	50	82%	A
2	36	40	90%	A
3	79	128	62%	S
4	484	506	96%	D
Total	640	704	91%	

Thus, the expert rules for this particular decision table are 91% correct.

The figures on the following pages list all 115 rules contained in the current preliminary version of the Expert System. Figure 6 catalogues the 5 main tables for each of the 28 positions and their associated first rule numbers. For example, if the player is facing enemy line #3 and encampment #1 and is considering a decision about reconnaissance (Table 1), the applicable rule is #68.

Figure 7 contains the actual rules. If both enemy strength conditions (E) and both friendly strength conditions (F) are true, the decision under the "DO" column should be followed where "A" means attack, "S" means take shallow reconnaissance, "D" means take deep reconnaissance, and "C" means continue (no attack). If any of the 4 conditions fail, the instructions under the "ELSE" column should be followed. These instructions are either (1) a decision: A, S, D, or C, or (2) a reference number which indicates the next rule to follow.

Enemy Line	Enemy Encampment	Table	Rule #	Enemy Line	Enemy Encampment	Table	Rule #
1	1	1	1	2	1	1	35
1	1	2	2	2	1	2	40
1	1	3	2	2	1	3	41
1	1	4	3	2	1	4	42
1	1	5	3	2	1	5	3
1	2	1	1	2	2	1	43
1	2	2	4	2	2	2	40
1	2	3	2	2	2	3	45
1	2	4	3	2	2	4	42
1	2	5	3	2	2	5	3
1	3	1	5	2	3	1	46
1	3	2	4	2	3	2	47
1	3	3	6	2	3	3	45
1	3	4	3	2	3	4	42
1	3	5	3	2	3	5	42
1	4	1	7	2	4	1	48
1	4	2	10	2	4	2	51
1	4	3	4	2	4	3	54
1	4	4	11	2	4	4	23
1	4	5	12	2	4	5	12
1	5	1	13	2	5	1	56
1	5	2	19	2	5	2	60
1	5	3	21	2	5	3	62
1	5	4	23	2	5	4	23
1	5	5	12	2	5	5	12
1	6	1	24	2	6	1	64
1	6	2	31	2	6	2	67
1	6	3	33	2	6	3	61
1	6	4	34	2	6	4	34
1	6	5	23	2	6	5	23

Figure 6. Decision Situations: First Rule Number

Enemy Line	Enemy Encampment	Table	Rule #	Enemy Line	Enemy Encampment	Table	Rule #
3	1	1	68	4	1	1	96
3	1	2	71	4	1	2	99
3	1	3	41	4	1	3	45
3	1	4	12	4	1	4	11
3	1	5	3	4	1	5	12
3	2	1	72	4	2	1	100
3	2	2	74	4	2	2	105
3	2	3	45	4	2	3	45
3	2	4	12	4	2	4	11
3	2	5	12	4	2	5	12
3	3	1	75	4	3	1	106
3	3	2	76	4	3	2	20
3	3	3	4	4	3	3	45
3	3	4	12	4	3	4	23
3	3	5	12	4	3	5	12
3	4	1	78	4	4	1	108
3	4	2	81	4	4	2	20
3	4	3	45	4	4	3	74
3	4	4	23	4	4	4	23
3	4	5	12	4	4	5	11
3	5	1	83	4	5	1	109
3	5	2	61	4	5	2	32
3	5	3	88	4	5	3	20
3	5	4	23	4	5	4	34
3	5	5	12	4	5	5	23
3	6	1	89	4	6	1	111
3	6	2	94	4	6	2	113
3	6	3	61	4	6	3	114
3	6	4	34	4	6	4	34
3	6	5	23	4	6	5	34

Figure 6. (Continued)

Rule #	≤	E ≤	≤	F ≤	DO	ELSE
1	0	1	9	9	S	D
2	0	3	9	9	A	C
3	0	1	6	9	A	C
4	0	3	6	9	A	C
5	0	1	9	9	A	D
6	0	3	8	9	A	C
7	0	2	8	9	A	8
8	0	2	5	5	A	9
9	3	9	5	5	S	D
10	0	3	4	9	A	C
11	0	1	0	9	A	C
12	0	1	4	9	A	C
13	0	2	9	9	A	14
14	0	4	8	8	A	15
15	0	2	7	7	A	16
16	0	4	4	5	A	17
17	5	9	4	5	S	18
18	0	9	0	2	S	D
19	3	4	6	7	C	20
20	5	9	0	9	C	A
21	0	4	9	9	A	22
22	0	2	4	8	A	C
23	0	3	0	9	A	C
24	0	5	7	9	A	25
25	0	1	6	6	A	26
26	0	5	4	5	A	27
27	0	3	0	2	A	28
28	2	5	6	6	D	29
29	6	6	6	9	D	30
30	8	9	0	5	D	S

Figure 7. Expert System Game Rules

Rule #	≤	E ≤	≤	F ≤	DO	ELSE
61	5	6	8	8	A	87
62	0	2	0	5	A	63
63	3	4	0	7	C	20
64	6	9	6	9	D	65
65	4	5	6	6	D	66
66	5	9	0	5	S	A
67	5	6	6	6	C	32
68	0	1	9	9	S	69
69	0	2	5	5	A	70
70	0	9	0	4	S	D
71	3	3	4	8	C	52
72	0	0	7	9	A	73
73	0	3	5	5	A	70
74	0	2	4	9	A	C
75	0	2	7	9	A	73
76	3	4	6	7	C	77
77	0	4	0	4	C	20
78	0	3	5	9	A	79
79	4	4	5	5	A	80
80	0	9	4	4	S	D
81	3	4	6	6	C	82
82	0	4	0	2	C	20
83	4	4	6	6	D	84
84	0	3	0	4	A	85
85	4	9	0	4	S	86
86	5	9	5	9	D	A
87	0	4	0	9	A	C
88	0	2	0	2	C	63
89	7	8	9	9	S	90
90	5	7	0	2	S	91

Figure 7. (Continued)

Rule #	≤	E ≤	≤	F ≤	DO	ELSE
31	3	6	6	6	C	32
32	7	9	0	9	C	A
33	3	4	6	6	C	20
34	0	6	0	9	A	C
35	0	1	9	9	S	36
36	0	1	5	5	A	37
37	2	3	5	5	S	38
38	0	3	0	4	D	39
39	4	9	0	5	S	D
40	0	2	5	9	A	C
41	0	2	7	9	A	C
42	0	1	5	9	A	C
43	0	0	9	9	A	44
44	1	1	9	9	S	36
45	0	2	6	9	A	C
46	0	1	8	9	A	8
47	0	3	5	9	A	C
48	0	3	7	9	A	49
49	0	3	5	5	A	50
50	4	5	5	5	S	D
51	3	3	6	7	C	52
52	0	3	0	2	C	53
53	4	9	0	9	C	A
54	3	3	6	8	C	55
55	0	3	0	5	C	53
56	0	3	7	9	A	57
57	4	5	8	8	A	58
58	0	3	0	5	A	59
59	4	5	0	5	S	D
60	3	4	6	6	C	61

Figure 7. (Continued)

Rule #	≤	E ≤	≤	F ≤	DO	ELSE
91	6	7	4	5	S	92
92	8	9	0	5	D	93
93	6	9	6	8	D	A
94	8	9	0	9	C	95
95	6	7	0	4	C	A
96	0	4	0	2	S	97
97	0	3	4	5	A	98
98	8	9	6	7	S	A
99	0	2	0	9	A	C
100	2	9	0	2	S	101
101	0	1	0	2	A	102
102	0	3	4	5	A	103
103	0	1	6	9	A	104
104	8	9	6	8	S	D
105	3	3	6	8	C	53
106	4	9	4	9	D	107
107	3	9	0	2	S	A
108	5	9	4	9	D	107
109	6	9	4	9	D	110
110	4	9	0	2	S	A
111	5	9	0	2	S	112
112	6	9	4	8	D	A
113	7	9	0	8	C	A
114	7	9	0	9	C	115
115	5	6	0	5	C	A

Figure 7. (Continued)

IV. EXPERIMENTAL PLAN

4.1 Objective

The objective of the experimental plan is to formulate a controlled experimental environment and procedure for assessing the expert system as a training aid and as a performance aid. The experiments are designed to verify a number of hypotheses about the usefulness of the expert system in various modes of operation. Human subjects will be enlisted to participate in the experiments and an automatic performance measurement module will be installed into the expert system to monitor the decisions made by the subjects. The following sections describe the experimental plan in more detail.

4.2 Verifiable Hypotheses

Four verifiable hypotheses have been selected for experimentation.

H_1: Performance improves with increased level of aiding.

H_2: As task familiarity increases, the usefulness of the expert system as a training aid increases.

H_3: When expertise is high, the benefit of the expert system as a performance aid is lower.

H_4: The maximum level of expertise is reached sooner when using the expert system.

Figure 8 shows the hypothesized relationship between the user's learning curve (dotted line) and the benefit of an expert system (solid line). When the user is new to the environment, aiding

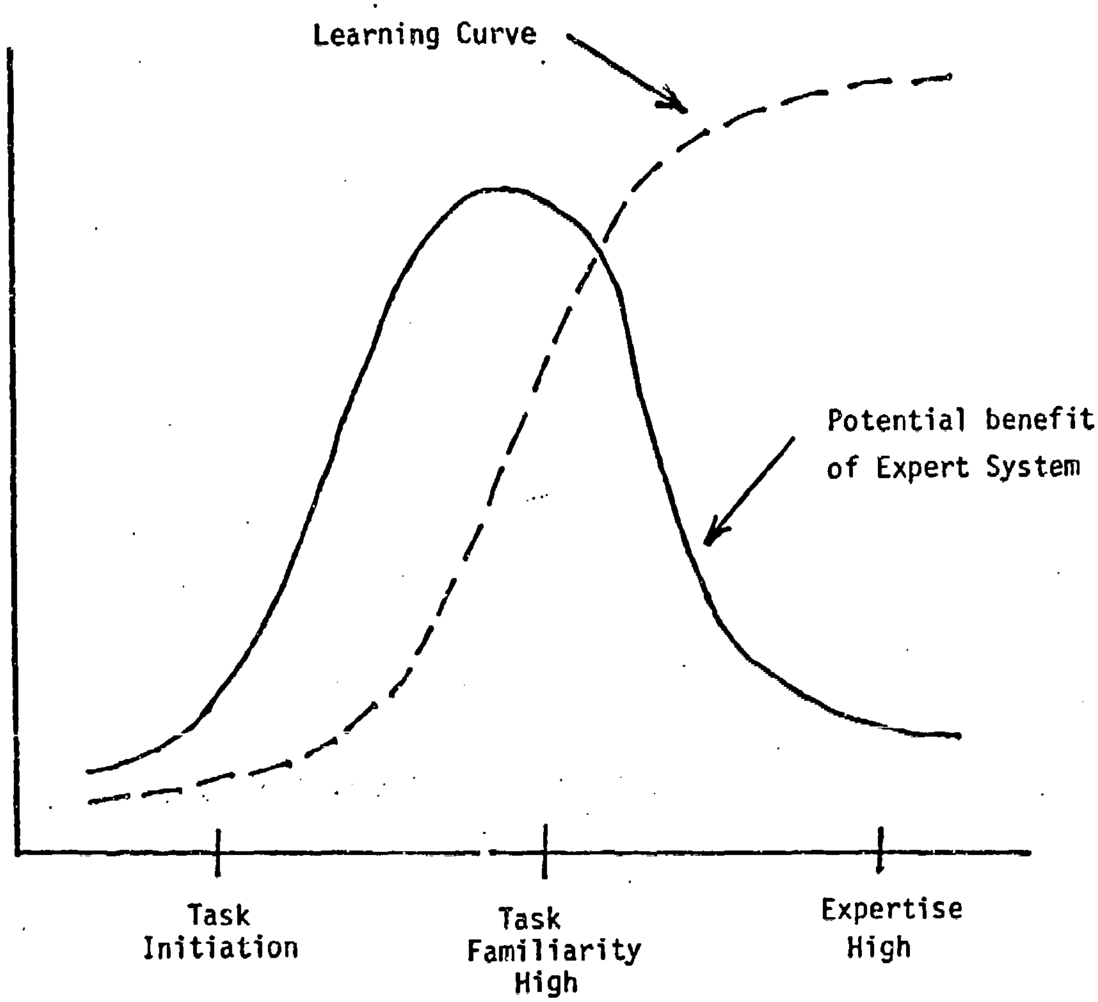

Figure 8. Potential Benefit of Expert System

of a particular subject. The subject simply plays one or more games with no aiding at all and his expertise level is the average number of correct decisions made divided by the total number decisions made.

$$\text{expertise} = \frac{\text{correct decisions}}{\text{total decisions}}$$

A second measure of expertise is based on the actual outcomes of the decision. This measure is simply the subject's average game score over a number of successive trials.

$$\text{expertise} = \text{average game score}$$

"Task Familiarity" can be measured by combining the number of games played with the total amount of time interacting with the game environment. The "Maximum Level of Expertise" is reached when the increase in expertise from successive trials approaches zero.

$$\text{task familiarity} = f(\#\text{ games, total time})$$

max expertise reached when:

$$\text{expertise}_i - \text{expertise}_{i-1} < \delta$$

The amount of aiding chosen is simply the number of times the subject used the expert system divided by the number of times he/she could have used it (in those experiments in which there is a choice).

$$\text{amount of aiding} = \frac{\#\text{ times E.S. used}}{\#\text{ times E.S. available}}$$

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4.4 Performance Measures

Measures of level of performance correspond to or are functions of the measured test factors. These can be simple or aggregated measures.

(1) Decision time as a function of expertise
(2) Decision time as a function of task familiarity
(3) Learning rate (increase in task familiarity over time)
(4) Mastery rate (increase in expertise over time)
(5) Time to reach maximum level of expertise
(6) Increased game score over time
(7) Expertise vs. amount of aiding used

4.5 Test Design

The test design specifies those factors that will be the objects of the test and those factors that will be eliminated in order to remove their influence on the results.

For hypothesis H_1 (See Section 4.2), the effects of factor 1 on factor 3 (See Section 4.3) will be measured. Factors 2, 4, 5, and 6 will be eliminated. Three levels of expert system aiding will be employed: full, partial, and none. With full aiding, the subjects will be able to consult the expert system any time desired. With partial aiding, only selected decisions will permit aiding. For experiments concerning H_1, a Latin Square-type design will be used.

For hypotheses H_2 and H_3, the effects of factors 1 and 6 will be assessed on factor Δ3. This means that the rate of change in level of expertise will be measured. Factors 2, 4, and 5 will be eliminated. Repeating single factor experiments will be used.

For hypothesis H_4, the effects of factor 1 on factor 4 will be measured. Factors 2, 3, 5, and 6 will be eliminated. Again, single factor experiments with repetitions will be used.

4.6 Experimental Procedure

Every experiment will be carried out in 4 phases: (1) definition, (2) design, (3) data collection, and (4) data analysis. The definition phase will concern the precise plan for carrying out each experiment. This includes the dependent and independent variables (factors), the number of observations taken, the number of subjects, the number of experimental groups, etc. The design phase concerns the type of test performed: Latin Square, repeated single factor experiments, etc. The data collection phase will occur during the experiments and will be automated due to the implementation of the Performance Evaluation Module within the expert system. Finally, data analysis will verify or reject the proposed hypotheses.

Since continued use of the expert system during experimentation increases task familiarity and expertise, the experimentation order influences the results. Thus, a Latin Square Design is appropriate for eliminating this effect. A Latin Square is a matrix that specifies different combinations of experimental order for the same groups of subjects. For example, in an experiment with three levels of aiding (full, partial, and none), three groups of subjects would participate in different orders with the levels. (See Figure 9). Thus, group A would use full aiding first, partial aiding second, and no aiding third. However, group C would use no aiding first, full aiding second, and partial aiding third, etc. In addition to the Latin Square, other economical designs will be used according to Crolotte, A. and Dechter, R., "Plan for TCO Testing and Evaluation", Perceptronics Report PFTR-1082-11-79, November 15, 1979. These designs include one-factor two-level experiments such as randomized repetition, cross-over repetition, and non-rectangular Latin Squares, etc. (See Figure 10)

Data analysis for these designs consists of a one-way analysis of variance (ANOVA). A summary of the one-way ANOVA method is described in Figure 11.

EXPERIMENT ORDER	NO AIDING	PARTIAL AIDING	FULL AIDING
1	C	B	A
2	B	A	C
3	A	C	B

Figure 9. Latin Square Design

ONE FACTOR - 2 LEVEL EXPERIMENT

Number of Subjects per Experiment	Preferred and Alternative Designs	Total Number of Subjects Required	Number of Tests per Subject	Number of df per Error	Comments
1	10 cross-over	10	2	8	Very powerful design affording a high number of degrees of freedom for the error but fairly costly in number of subjects.
	7 cross-over	7	2	5	Powerful design requiring less subjects and still providing the minimum number of degrees of freedom for the error.
	6 randomized blocks	6	2	5	Design requiring less subjects than cross-over for the same number of degrees of freedom for the error. It is, however, implicitly assumed that no position effect exists.
2	7 cross-over	14	2	5	Same as above.
	6 randomized blocks	12	2	5	Same as above.
3	4 cross-over with repetition	12	4	4	If no treatment x cross-over effect exists, the number of degrees of freedom for the error is 5.
	4 randomized blocks with repetition	12	4	6	If no treatment x block effect exists, the number of degrees of freedom for the error is 7. No position effect assumed.
4	4 cross-over with repetition	16	4	4	Same as above.
	3 randomized blocks with repetition	12	4	4	If no treatment x block effect exists, the number of degrees of freedom for the error is 5. No position effect assumed.
≥ 5	3 randomized blocks with repetition	≥ 15	4	4	Same as above.

Figure 10. Contingency plans for one-factor 2-level experiments.

ONE-WAY ANALYSIS OF VARIANCE

One Way ANOVA

Source	Degrees of freedom (df)	Sum of Squares (SS)	Mean of Squares (MS)
Between Alternatives	k-1	$SS_{alt} = \sum_{j=1}^{k} \frac{T_{.j}^2}{n_j} - \frac{T^2}{N}$	$MS_{alt} = \frac{SS_{alt}}{k-1}$
Within Alternatives or Error	N-k	$\sum_{j=1}^{k} \sum_{i=1}^{n_j} y_{ij}^2 - \sum_{j=1}^{k} \frac{T_{.j}^2}{n_j}$	$MS_{err} = \frac{SS_{err}}{N-k}$
Totals	N-1	$\sum_{j=1}^{k} \sum_{i=1}^{n_j} y_{ij}^2 - \frac{T^2}{N}$	

Where y_{ij} = observation i of alternative j.

k = number of alternatives.

n_j = number of observations for alternative j.

$N = \sum_j n_j$

$T_{.j} = \sum_{i=1}^{n_j} y_{ij}$ = total for alternative j.

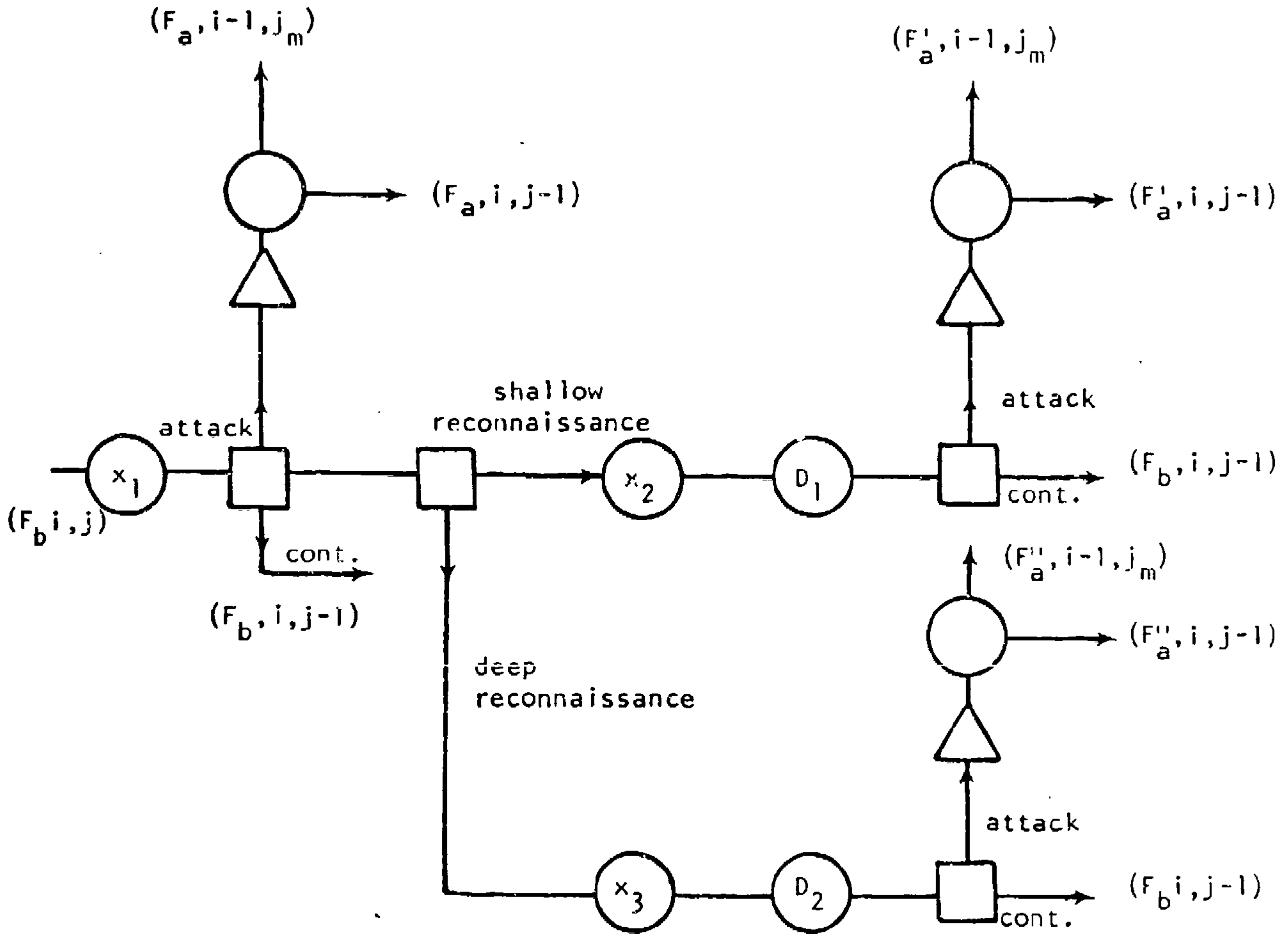
T = Grand total.

Figure 11. One-way analysis of variance.

APPENDIX A

DECISION DIAGRAM FOR GAME

The following decision diagram shows the decision points, event points, report points, and identification points for the Scenario Generator game.



Flow-diagram for data and decisions in the (i,j) stage. The triplet (F,i,j) denotes the state of entering the (i,j) stage with force F.

Random Variables

F_b - Own force on entry

F_a - Own force after an attack

x_1 - Initial report regarding enemy strength

x_2 - Report obtained by shallow reconnaissance

x_3 - Report obtained by deep reconnaissance

D_1 - Being detected during shallow reconnaisance

D_2 - Being detected during deep reconnaissance

APPENDIX B

DECISION TABLES FOR THE GAME

The following tables show the optimal decisions for all encountered situations in the Scenario Generator game.

OPTIMALITY March 6, 1982

```
DECISION MAP         ENEMY L NO 1        ENCAMPMENT 1          (I=4, J=7)

                     NNNLNLLNNMLNNLLMMNNHLLMNMMNNLLHHNNMMHHLLHLMMNHHLLMMHHMLHHMMHMHHH
                     NNLNLNLNMNLLMNNNLNHNLMLMNMLHNHNLMHNHNMLHLMLMHNHMHLHLMMHLHMHMHMHH
                     NLNNLLNMNNLMLMNLNHNNMLLMMNHLHNLNHMHNMNHLLMMLHHNHMHLMLMHHLHMMHHMH
ATTACK/CONTINUE/SHALLOW/DEEP       (REPORT X1)
          HHH        SSSSDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
          HHM        DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSDSSSSS
          MHH      i DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSDSSSSS
          HMM        DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSSSS
          MHM        DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSSSS
          MMM        DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
          LHM        DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
          LMM        DDSDDDDSSSDDDSDSDSSSDDDSDSSDSDSSSDSDSSSDSDSDSSSDSDSDDDSSSDDDSSSS
          NHM        DDSDDDDSSSDDDSDSDSSSDDDSDSSDSDSSSDSDSSSDSDSDSSSDSDSDDDSSSDDDSSSS
          NMM        DDDDDDDDSDDDDDDDDDDDSDSSSSSSSSSSSDSDSSSDSDDDSSSDDDDDDDSSSSDSSSSS
          NLL        DDDDDDDSSSSSDSDSSSSSDSDSDSSSSSSSSSSSSSSDSSSSSSSDSDSDDSSSSDDDSSSD
ATTACK/CONTINUE GIVEN SHALLOW, NOT DETECTED    (REPORT X2)
          HHH        AAAAAAAAACAAAAAA...CCCAAA............CCCCCC...CCCCCCCCCCCCCCCCC
          HHM        AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          MHH        AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          HMM        AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          MHM        AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          MMM        ACACCCCCACCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          LHM        ACACCCCCACCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          LMM        CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          NHM        CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          NMM        CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          NLL        CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN SHALLOW, DETECTED        (REPORT X2)
          HHH        AAAAAAAAACAAAAAA...CCCAAA............CCCCCC...CCCCCCCCCCCCCCCCC
          HHM        AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          MHH        AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          HMM        AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          MHM        AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          MMM        ACACCCCCACCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          LHM        ACACCCCCACCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          LMM        CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          NHM        CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          NMM        CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          NLL        CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN DEEP, NOT DETECTED       ATTACK/CONTINUE GIVEN DEEP, DETECTED
                     HMLN                                          HMLN
                     HMLL            (REPORT X3)                   HMLL
                     HMLN                                          HMLN
          HHH        CCAA                             HHH          CCAA
          HHM        CCCA                             HHM          CCCA
          MHH        CCCA                             MHH          CCCA
          HMM        CCCA                             HMM          CCCA
          MHM        CCCA                             MHM          CCCA
          MMM        CCCA                             MMM          CCCA
          LHM        CCCA                             LHM          CCCA
          LMM        CCCC                             LMM          CCCC
          NHM        CCCC                             NHM          CCCC
          NMM        CCCC                             NMM          CCCC
          NLL        CCCC                             NLL          CCCC
```

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```
DECISION MAP           ENEMY LINE 1          ENCAMPMENT 2          (I=4,  J=6)

                       NMNLNLLNNMLNNLLMMNNHLLMNMMNNLLHHNNMMHHLLHLMMNHHLLMMHHMLHHMMHMHHH
                       NNLNLNLNMNLLMNMNLNHNLMLMNMLHNHNLMHNHNMLHLMLMHNHMHLHLMMHLHMHMHMHH
                       NLNNLLNMNNLMLMNLNHNNMLLMMNHLHNLNHMHNMNHLLMMLHHNHMHLMLMHHLHMMHHMH
ATTACK/CONTINUE/SHALLOW/DEEP       (REPORT X1)
          HHH          ASSSDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
          HHM          DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
          MHH          DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
          HMM          DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSSSD
          MHM          DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSSSD
          MMM          DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
          LHM          DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
          LMM          SDDDDSDDDDDDDDDDDDDDDDDSDSSDSDSSSSSSSSSSSSDDDSSSSSSSSSSDSSSDDSSSSD
          NHM          SDDDDSDDDDDDDDDDDDDDDDDSDSSDSDSSSSSSSSSSSSDDDSSSSSSSSSSDSSSDDSSSSD
          NMM          DDSDDDDDDDDDDDDDDDSSSDDDDDDDDDDDDDDDSDSDDDDDDDSDSSSDSDSDDDSSSDSDSSSS
          NLL          SDDDDDDSSSDDDSDSDSDSDSDDDDSDSDSSSSSSSSDSDDDDSSSDDDDDDDDSSSDSDDDDS
ATTACK/CONTINUE GIVEN SHALLOW, NOT DETECTED    (REPORT X2)
          HHH          AAAAAAAAAACAAAAAA...CCCAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
          HHM          AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          MHH          AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          HMM          AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          MHM          AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          MMM          AAAAACACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          LHM          AAAAACACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          LMM          CCCCCCCCCCCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          NHM          CCCCCCCCCCCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          NMM          CCCCCCCCCCCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          NLL          CCCCCCCCCCCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN SHALLOW, DETECTED            (REPORT X2)
          HHH          AAAAAAAAAACAAAAAA...CCCAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
          HHM          AAAAACACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          MHH          AAAAACACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          HMM          AAAAACACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          MHM          AAAAACACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          MMM          ACACCCCCACCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          LHM          ACACCCCCACCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          LMM          CCCCCCCCCCCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          NHM          CCCCCCCCCCCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          NMM          CCCCCCCCCCCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          NLL          CCCCCCCCCCCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN DEEP, NOT DETECTED         ATTACK/CONTINUE GIVEN DEEP, DETECTED
                       HMLN                                            HMLN
                       HMLL              (REPORT X3)                   HMLL
                       HMLN                                            HMLN
          HHH          CCAA                              HHH           CCAA
          HHM          CCCA                              HHM           CCCA
          MHH          CCCA                              MHH           CCCA
          HMM          CCCA                              HMM           CCCA
          MHM          CCCA                              MHM           CCCA
          MMM          CCCA                              MMM           CCCA
          LHM          CCCA                              LHM           CCCA
          LMM          CCCC                              LMM           CCCC
          NHM          CCCC                              NHM           CCCC
          NMM          CCCC                              NMM           CCCC
          NLL          CCCC                              NLL           CCCC
```

```
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DECISION MAP       ENEMY LINE 1       ENCAMPMENT 3       (I=4, J=5)

                   NNNLNLLNNMLNNLLMMNNHLLMNMMNNLLHHNNMMHHLLHLMMNHHLLMMHHMLHHMMHMHHH
                   MNLNLNLNMNLLMNMNLNHNLMLMNMLHNHNLMHNHNMLHLMLMHNHMHLHLMMHLHMHMHMHH
                   NLNNLLNMNNLMLMNLNHNNMLLMMNHLHMLNHMHNMNHLLMMLHHNHMHLMLMHHLHMMHHMH
ATTACK/CONTINUE/SHALLOW/DEEP      (REPORT X1)
      HHH          AAAADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
      HHM          ADADDDDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
      MHH          ADADDDDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
      HMM          DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
      MHM          DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
      MMM          DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
      LHM          DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
      LMM          DDDDDDDDDDDDDDDDSSSDDDSDSDDDDDDDSDSDDSSSSDSSSSSSSSSSSDSSSDSDSSSS
      NHM          DDDDDDDDDDDDDDDDSSSDDDSDSDDDDDDDSDSDDSSSSDSSSSSSSSSSSDSSSDSDSSSS
      NMM          DDSDDSDSSSDDDSDSDSSSDDDDDDDDDDDDDDDSSSDSDSSSDSDSDDDSSSSSSSSSSS
      NLL          SDSDSDSSDSDDSDSDDDSDDDDDDDSDSDSSSSSSSSSSDSDDDSSSSDSDSSDSSSDDSDDDS
ATTACK/CONTINUE GIVEN SHALLOW, NOT DETECTED   (REPORT X2)
      HHH          AAAAAAAAAACAAAAAA...CCCAAA............CCCCCC...CCCCCCCCCCCCCCCC
      HHM          AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
      MHH          AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
      HMM          AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
      MHM          AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
      MMM          AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
      LHM          AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
      LMM          CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
      NHM          CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
      NMM          CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
      NLL          CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN SHALLOW, DETECTED         (REPORT X2)
      HHH          AAAAAAAAAACAAAAAA...CCCAAA............CCCCCC...CCCCCCCCCCCCCCCC
      HHM          AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
      MHH          AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
      HMM          AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
      MHM          AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
      MMM          AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
      LHM          AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
      LMM          CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
      NHM          CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
      NMM          CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
      NLL          CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN DEEP, NOT DETECTED      ATTACK/CONTINUE GIVEN DEEP, DETECTED
                   HMLN                                          HMLN
                   HMLL              (REPORT X3)                 HMLL
                   HMLN                                          HMLN
      HHH          CCAA                               HHH        CCAA
      HHM          CCCA                               HHM        CCCA
      MHH          CCCA                               MHH        CCCA
      HMM          CCCA                               HMM        CCCA
      MHM          CCCA                               MHM        CCCA
      MMM          CCCA                               MMM        CCCA
      LHM          CCCA                               LHM        CCCA
      LMM          CCCC                               LMM        CCCC
      NHM          CCCC                               NHM        CCCC
      NMM          CCCC                               NMM        CCCC
      NLL          CCCC                               NLL        CCCC
```

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```
DECISION MAP          ENEMY LINE 1          ENCAMPMENT 4          (I=4, J=4)

                      NMNLNLLNNMLNNLLMMNNHLLMNMMNNLLHHNNMMHHLLHLMMNHHLLMMHHMLHHMMHMHHH
                      NMLNLNLNMNLLMNMNLNHNLMLMNMLHNHNLMHNHNMLHLMLMHNHMHLHLMMHLHMHMHMHH
                      NLNNLLNMNNLMLMNLNHNNMLLMMNHLHNLNHMHNMNHLLMMLHHNHMHLMLMHHLHMMHHMH
ATTACK/CONTINUE/SHALLOW/DEEP     (REPORT X1)
         HHH          AAAAADADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
         HHM          AAAAAAAAAADDADADDDALDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
         MHH          AAAAAAAAAADDADADDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
         HMM          ADADDDDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSDSDDDS
         MHM          ADADDDDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSDSDDDS
         MMM          DDDDDDDDDDDDDDDDDDDDDDDDDDDSDSDSSSDSDSSDDDDDDSSSDDDDDDDSSSSDSSSSD
         LHM          DDDDDDDDDDDDDDDDDDDDDDDDDDDSDSDSSSDSDSSDDDDDDSSSDDDDDDDSSSSDSSSSD
         LMM          AAAAAAAAAASSASASSSASSSSSSSSSSSSSSSSSSSSSSSSSDSSSSDSDSDDDSSSDDDDDD
         NHM          AAAAAAAAAASSASASSSASSSSSSSSSSSSSSSSSSSSSSSSSDSSSSDSDSDDDSSSDDDDDD
         NMM          ASASSSSSASSSSSSSSSSSSDSDSDSDSDSDDDSDSDDSSSDDDSSSDDDDDDDDDDDDDSSSS
         NLL          DDDDDDDDDDDDDDDDDDDSDSDDDDDDDDDDDDDDDDDDSDSDDDSSSDDDDDDDSSSDDDSSSS
ATTACK/CONTINUE GIVEN SHALLOW, NOT DETECTED     (REPORT X2)
         HHH          AAAAAAAAAACAAAAAA...CCCAAA............CCCCCC...CCCCCCCCCCCCCCCCC
         HHM          AAAAAAACACACACACC...CACCCC............CCCCCC...CCCCCCCCCCCCCCCCC
         MHH          AAAAAAACACACACACC...CACCCC............CCCCCC...CCCCCCCCCCCCCCCCC
         HMM          AAAAAAACACACACACC...CACCCC............CCCCCC...CCCCCCCCCCCCCCCCC
         MHM          AAAAAAACACACACACC...CACCCC............CCCCCC...CCCCCCCCCCCCCCCCC
         MMM          AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
         LHM          AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
         LMM          AAAAAAAAAACAAAAAA...CCCAAA............CCCCCC...CCCCCCCCCCCCCCCCC
         NHM          AAAAAAAAAACAAAAAA...CCCAAA............CCCCCC...CCCCCCCCCCCCCCCCC
         NMM          AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
         NLL          CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN SHALLOW, DETECTED              (REPORT X2)
         HHH          AAAAAAAAAACAAAAAA...CCCAAA............CCCCCC...CCCCCCCCCCCCCCCCC
         HHM          AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
         MHH          AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
         HMM          AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
         MHM          AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
         MMM          AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
         LHM          AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
         LMM          CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
         NHM          CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
         NMM          CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
         NLL          CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN DEEP, NOT DETECTED         ATTACK/CONTINUE GIVEN DEEP, DETECTED
                      HMLN                                              HMLN
                      HMLL            (REPORT X3)                       HMLL
                      HMLN                                              HMLN
         HHH          CCAA                              HHH             CCAA
         HHM          CCCA                              HHM             CCCA
         MHH          CCCA                              MHH             CCCA
         HMM          CCCA                              HMM             CCCA
         MHM          CCCA                              MHM             CCCA
         MMM          CCCA                              MMM             CCCA
         LHM          CCCA                              LHM             CCCA
         LMM          CCAA                              LMM             CCCA
         NHM          CCAA                              NHM             CCCA
         NMM          CCCA                              NMM             CCCA
         NLL          CCCA                              NLL             CCCC
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DECISION MAP        ENEMY LINE 1        ENCAMPMENT 5        (I=4, J=3)

                    NNMLNLLNNMLNNLLMMNNHLLMNMMNNLLHHNNMMHHLLHLMMNHHLLMMHHMLHHMMHMHHH
                    NNLNLNLNMNLLMNMNLNHNLMLMNMLHNHNLMHNHNMLHLMLMHNHMHLHLMMHLHMHMHMHH
                    NLNNLLNMNNLMLMNLNHNNMLLMMNHLHNLNHMHNMNHLLMMLHHNHMHLMLMHHLHMMHHMH
ATTACK/CONTINUE/SHALLOW/DEEP      (REPORT X1)
     HHH            AAAAAAAAAADDADADDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
     HHM            AAAAAAAAAAAAAAAAAAAAADDDAAAAAAAAAAAAAAAADDDDDDDDDDDDDDDDDDSDSDDDD
     MHH            AAAAAAAAAAAAAAAAAAAAADDDAAAAAAAAAAAAAAAADDDDDDDDDDDDDDDDDDSDSDDDD
     HMM            AAAAAAAAAADDADADDDADDDDDDDDADADDDDDDDDDDDDDDDDDDDDDDDDDDSDSSSSD
     MHM            AAAAAAAAAADDADADDDADDDDDDDDADADDDDDDDDDDDDDDDDDDDDDDDDDDSDSSSSD
     MMM            DDDDDDDDDDDDDDDDDDSDSDDDDDDSDSDSSSDSDSSSDSDDDSSSDDDDDDDSSSDDDSSSS
     LHM            DDDDDDDDDDDDDDDDDDSDSDDDDDDSDSDSSSDSDSSSDSDDDSSSDDDDDDDSSSDDDSSSS
     LMM            AAAAAAAAAAAAAAAAAAAASASAAAAAAAAAAAAAAAASSSSSSAAASSSSSSSSSSSSSSSD
     NHM            AAAAAAAAAAAAAAAAAAAASASAAAAAAAAAAAAAAAASSSSSSAAASSSSSSSSSSSSSSSD
     NMM            AAAAAAAAAAAAAAAAAASASSSSASASASASSSSSSSSSSSSSDSSSSDSDSDDDDDDDDDDDD
     NLL            AAAAASASASSSSSSSSSASSSSSSSSSSSSSSSSSSSSSSDSSSSDSDSDDDSSSSDSSSSD
ATTACK/CONTINUE GIVEN SHALLOW, NOT DETECTED     (REPORT X2)
     HHH            AAAAAAAAAAAAAAAAA...AAAAAA.............CCCAAA...CCCCCCCCCCCCCCCCC
     HHM            AAAAAAAAAAAAAAAAA...AAAAAA.............CCCAAA...CCCCCCCCCCCCCCCCC
     MHH            AAAAAAAAAAAAAAAAA...AAAAAA.............CCCAAA...CCCCCCCCCCCCCCCCC
     HMM            AAAAAAACACACACACC...CACCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
     MHM            AAAAAAACACACACACC...CACCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
     MMM            AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
     LHM            AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
     LMM            AAAAAAAAAAAAAAAAA...AAAAAA.............CCCAAA...CCCCCCCCCCCCCCCCC
     NHM            AAAAAAAAAAAAAAAAA...AAAAAA.............CCCAAA...CCCCCCCCCCCCCCCCC
     NMM            AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
     NLL            AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN SHALLOW, DETECTED         (REPORT X2)
     HHH            AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
     HHM            AAAAAAACACACACACC...CACCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
     MHH            AAAAAAACACACACACC...CACCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
     HMM            AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
     MHM            AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
     MMM            AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
     LHM            AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
     LMM            AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
     NHM            AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
     NMM            AAAAACACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
     NLL            CCCCCCCCCCCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN DEEP, NOT DETECTED        ATTACK/CONTINUE GIVEN DEEP, DETECTED
                    HMLN                                          HMLN
                    HMLL               (REPORT X3)                HMLL
                    HMLN                                          HMLN
     HHH            CCAA                             HHH          CCAA
     HHM            CCAA                             HHM          CCCA
     MHH            CCAA                             MHH          CCCA
     HMM            CCCA                             HMM          CCCA
     MHM            CCCA                             MHM          CCCA
     MMM            CCCA                             MMM          CCCA
     LHM            CCCA                             LHM          CCCA
     LMM            CCAA                             LMM          CCCA
     NHM            CCAA                             NHM          CCCA
     NMM            CCAA                             NMM          CCCA
     NLL            CCCA                             NLL          CCCC
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DECISION MAP        ENEMY LINE 1        ENCAMPMENT 6        (I=4, J=2)

                    NNNLNLLNNMLNNLLMMNNHLLMNMMNNLLHHNNMMHHLLHLMMNHHLLMMHHMLHHMMHMHHH
                    NNLNLNLNMNLLMNMNLNHNLMLMNMLHNHNLHHNHNMLHLMLMHNHMHLHLMMHLHMHMHMHH
                    NLNNLLNMNNLMLMNLNHNNMLLMMNHLHNLNHMHNMNHLLMMLHHNHMHLMLMHHLHMMHHMH
ATTACK/CONTINUE/SHALLOW/DEEP      (REPORT X1)
          HHH       AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADADADDDDDDDDDDDDDDDDDDDDDDDD
          HHM       AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADADDDDAAADDDDDDSDDDSSSDDDD
          MHH       AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADADDDDAAADDDDDDSDDDSSSDDDD
          HMM       AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDDAAADDDDDDSDDDSSSSSSD
          MHM       AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDDAAADDDDDDSDDDSSSSSSD
          MMM       AAAAADADADDDDDDDDDADDDDDDDSDSDSSSDSDSSSDSDDDDDDDDDDDDDDSSSSDSSSSS
          LHM       AAAAADADADDDDDDDDDADDDDDDDSDSDSSSDSDSSSDSDDDDDDDDDDDDDDSSSSDSSSSS
          LMM       AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAASAAAASSSSSSSSSSSSSDDDD
          NHM       AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAASAAAASSSSSSSSSSSSSDDDD
          NMM       AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAASSSSSAAASSSSSSSSSSSSSDDDD
          NLL       AAAAAAAAAAAAAAAAAAAASASAAASASASSSSSSSSSSSSSSSSSSSSSSDSSDDDDDD
ATTACK/CONTINUE GIVEN SHALLOW, NOT DETECTED      (REPORT X2)
          HHH       AAAAAAAAAAAAAAAAA...AAAAAA............CCCAAA...CCCCCCACCCCCCCCCC
          HHM       AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAACAAACCCCCCC
          MHH       AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAACAAACCCCCCC
          HMM       AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAACAAACCCCCCC
          MHM       AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAACAAACCCCCCC
          MMM       AAAAAAACACACACACC...CACCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          LHM       AAAAAAACACACACACC...CACCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          LMM       AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAACCCCCCC
          NHM       AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAACCCCCCC
          NMM       AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAACAAACCCCCCC
          NLL       AAAAAAAAAAAAAAAAA...AAAAAA............CCCAAA...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN SHALLOW, DETECTED          (REPORT X2)
          HHH       AAAAAAAAAAAAAAAAA...AAAAAA............CCCAAA...CCCCCCCCCCCCCCCCC
          HHM       AAAAAAAAAAAAAAAAA...AAAAAA............CCCAAA...CCCCCCCCCCCCCCCCC
          MHH       AAAAAAAAAAAAAAAAA...AAAAAA............CCCAAA...CCCCCCCCCCCCCCCCC
          HMM       AAAAAAAAAAAAAAAAA...CACAAA............CCCCCC...CCCCCCCCCCCCCCCCC
          MHM       AAAAAAAAAAAAAAAAA...CACAAA............CCCCCC...CCCCCCCCCCCCCCCCC
          MMM       AAAAAAACACACACACC...CACCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          LHM       AAAAAAACACACACACC...CACCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          LMM       AAAAAAAAAAAAAAAAA...AAAAAA............CCCAAA...CCCCCCCCCCCCCCCCC
          NHM       AAAAAAAAAAAAAAAAA...AAAAAA............CCCAAA...CCCCCCCCCCCCCCCCC
          NMM       AAAAAAAAAAAAAAAAA...CACAAA............CCCCCC...CCCCCCCCCCCCCCCCC
          NLL       AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN DEEP, NOT DETECTED        ATTACK/CONTINUE GIVEN DEEP, DETECTED
                    HMLN                                                HMLN
                    HMLL                 (REPORT X3)                    HMLL
                    HMLN                                                HMLN
          HHH       CCAA                                     HHH        CCAA
          HHM       CAAA                                     HHM        CCAA
          MHH       CAAA                                     MHH        CCAA
          HMM       CAAA                                     HMM        CCAA
          MHM       CAAA                                     MHM        CCAA
          MMM       CCCA                                     MMM        CCCA
          LHM       CCCA                                     LHM        CCCA
          LMM       CAAA                                     LMM        CCAA
          NHM       CAAA                                     NHM        CCAA
          NMM       CAAA                                     NMM        CCAA
          NLL       CCAA                                     NLL        CCCA
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DECISION MAP          ENEMY LINE 1          ENCAMPMENT 7          (I=4, J=1)

                      NNNLNLLNNMLNNLLMMNNHLLMNMMNNLLHHNNMMHHLLHLMMNHHLLMMHHMLHHMMHMHHH
                      NNLNLNLNMNLLMNMNLNHNLMLMNMLHNHNLMHNHNMLHLMLMHNHMHLHLMMHLHMHMHMHH
                      NLNNLLNMNNLMLMNLNHNNMLLMMNHLHNLNHMHNMNHLLMMLHHNHMHLMLMHHLHMMHHMH
ATTACK/CONTINUE/SHALLOW/DEEP      (REPORT X1)
          HHH         AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
          HHM         AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
          MHH         AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
          HMM         AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
          MHM         AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
          MMM         AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
          LHM         AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
          LMM         AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
          NHM         AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
          NMM         AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
          NLL         AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
ATTACK/CONTINUE GIVEN SHALLOW, NOT DETECTED    (REPORT X2)
          HHH         AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          HHM         AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          MHH         AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          HMM         AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          MHM         AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          MMM         AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          LHM         AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          LMM         AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          NHM         AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          NMM         AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          NLL         AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
ATTACK/CONTINUE GIVEN SHALLOW, DETECTED        (REPORT X2)
          HHH         AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          HHM         AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          MHH         AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          HMM         AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          MHM         AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          MMM         AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          LHM         AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          LMM         AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          NHM         AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          NMM         AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          NLL         AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
ATTACK/CONTINUE GIVEN DEEP, NOT DETECTED       ATTACK/CONTINUE GIVEN DEEP, DETECTED
                      HMLN                                        HMLN
                      HMLL            (REPORT X3)                 HMLL
                      HMLN                                        HMLN
          HHH         AAAA                             HHH        AAAA
          HHM         AAAA                             HHM        AAAA
          MHH         AAAA                             MHH        AAAA
          HMM         AAAA                             HMM        AAAA
          MHM         AAAA                             MHM        AAAA
          MMM         AAAA                             MMM        AAAA
          LHM         AAAA                             LHM        AAAA
          LMM         AAAA                             LMM        AAAA
          NHM         AAAA                             NHM        AAAA
          NMM         AAAA                             NMM        AAAA
          NLL         AAAA                             NLL        AAAA
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DECISION MAP          ENEMY LINE 2          ENCAMPMENT 1          (I=3, J=7)

                      NNNLNLLNNMLNNLLMMNNHLLMNMMNNLLHHNNMMHHLLHLMMHHHLLMMHHMLHHMMHMHHH
                      NNLNLNLNMNLLMNMNLNHNLMLNNMLHNHNLMHNHNMLHLMLMHNHMHLHLMMHLHMHMHMHH
                      NLNNLLNMNNLMLMNLNHNNMLLMMNHLHNLNHMHNMNHLLMMLHHNHMHLMLMHHLHMMHHMH
ATTACK/CONTINUE/SHALLOW/DEEP          (REPORT X1)
          HHH         SSSSDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
          HHM         DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSDSSSSD
          MHH         DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSDSSSSD
          HMM         D.DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDS
          MHM         DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDS
          MMM         DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSDSSSSD
          LHM         DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSDSSSSD
          LMM         AAAAASASASSSSSSSSASSSSSSSSSSSSSSSSSSSSSSDSSSSSSSSSSSDSSSSDSSSSS
          NHM         AAAAASASASSSSSSSSASSSSSSSSSSSSSSSSSSSSSSDSSSSSSSSSSSDSSSSDSSSSS
          NMM         DDDDDDDDSDDDDDDDDDDDDSDSSSSSSSSSSSDSDSSSDSDDDSSSDDDDDDDSSSSDSSSSS
          NLL         DDDDDDDSSSSSDSDSSSSSDSDSDSSSSSSSSSSSSSSSDSSSSSSSSDSDSDDSSSSDDDSSSD
ATTACK/CONTINUE GIVEN SHALLOW, NOT DETECTED     (REPORT X2)
          HHH         AAAAAAAAAACAAAAAA...CCCAAA............CCCCCC...CCCCCCCCCCCCCCCCC
          HHM         AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          MHH         AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          HMM         AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          ...M        AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          MMM         AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          LHM         AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          LMM         AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          NHM         AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          NMM         CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          NLL         CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN SHALLOW, DETECTED         (REPORT X2)
          HHH         AAAAAAAAAACAAAAAA...CCCAAA............CCCCCC...CCCCCCCCCCCCCCCCC
          HHM         AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          MHH         AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          HMM         AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          MHM         AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          MMM         ACACCCCCACCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          LHM         ACACCCCCACCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          LMM         CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          NHM         CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          NMM         CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          NLL         CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN DEEP, NOT DETECTED    ATTACK/CONTINUE GIVEN DEEP, DETECTED
                      HMLN                                      HMLN
                      HMLL            (REPORT X3)               HMLL
                      HMLN                                      HMLN
          HHH         CCAA                            HHH       CCAA
          HHM         CCCA                            HHM       CCCA
          MHH         CCCA                            MHH       CCCA
          HMM         CCCA                            HMM       CCCA
          MHM         CCCA                            MHM       CCCA
          MMM         CCCA                            MMM       CCCA
          LHM         CCCA                            LHM       CCCA
          LMM         CCCA                            LMM       CCCC
          NHM         CCCA                            NHM       CCCC
          NMM         CCCC                            NMM       CCCC
          NLL         CCCC                            NLL       CCCC
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DECISION MAP        ENEMY LINE 2        ENCAMPMENT 2        (I=3, J=6)

                    NNNLNLLNNMLNNLLMMNNHLLMNMMNNLLHHNNMMHHLLHLMMNHHLLMMHHMLHHMMHMHHH
                    NMLNLNLNMNLLMNMNLNHNLMLMNMLHNHNLMHNHNMLHLMLMHNHMMLHLMMHLHMHMHMHH
                    NLNNLLNMNNLMLMNLNHNNMLLMMNHLHNLNHMHNMNHLLMMLHHNHMHLMLMHHLHMMHHMH
ATTACK/CONTINUE/SHALLOW/DEEP      (REPORT X1)
        HHH         ASSSDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
        HHM         ADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSD
        MHH         ADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSD
        HMM         DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
        MHM         DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
        MMM         DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDS
        LHM         DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDS
        LMM         AAAAASASASSSSSSSDADSSSSSSDSDSDDDSDSDDSSSSDSSSSDSDSDDDSSSDDDSSSS
        NHM         AAAAASASASSSSSSSSDADSSSSSSDSDSDDDSDSDDSSSSDSSSSDSDSDDDSSSDDDSSSS
        NMM         DDSDDDDDDDDDDDDDDSSSDDDDDDDDDDDDSDSDDDDDDSDSSSDSDSDDDSSSDSDSSSS
        NLL         SDDDDDDSSSDDDSDSDSDSDSDDDDSDSDSSSSSSSSSDSDDDDDSSSDDDDDDDSSSDSDDDDS
ATTACK/CONTINUE GIVEN SHALLOW, NOT DETECTED      (REPORT X2)
        HHH         AAAAAAAAAACAAAAAA...CCCAAA............CCCCCC...CCCCCCCCCCCCCCCCC
        HHM         AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        MHH         AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        HMM         AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        MHM         AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        MMM         AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        LHM         AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        LMM         AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        NHM         AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        NMM         CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        NLL         CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN SHALLOW, DETECTED          (REPORT X2)
        HHH         AAAAAAAAAACAAAAAA...CCCAAA............CCCCCC...CCCCCCCCCCCCCCCCC
        HHM         AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        MHH         AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        HMM         AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        MHM         AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        MMM         AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        LHM         AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        LMM         CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        NHM         CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        NMM         CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        NLL         CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN DEEP, NOT DETECTED        ATTACK/CONTINUE GIVEN DEEP, DETECTED
                    HMLN                                          HMLN
                    HMLL            (REPORT X3)                   HMLL
                    HMLN                                          HMLN
        HHH         CCAA                            HHH           CCAA
        HHM         CCCA                            HHM           CCCA
        MHH         CCCA                            MHH           CCCA
        HMM         CCCA                            HMM           CCCA
        MHM         CCCA                            MHM           CCCA
        MMM         CCCA                            MMM           CCCA
        LHM         CCCA                            LHM           CCCA
        LMM         CCCA                            LMM           CCCC
        NHM         CCCA                            NHM           CCCC
        NMM         CCCC                            NMM           CCCC
        NLL         CCCC                            NLL           CCCC
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DECISION MAP        ENEMY LINE 2        ENCAMPMENT 3        .(I=3, J=5)

                NNNLNLLNNMLNNLLMMNNHLLMNMMNNLLHHNNMMHHLLHLMMNHHLLMMHHMLHHMMHMHHH
                NNLNLNLNMNLLMNMNLNHNLMLMNMLHNHNLMHNHNMLHLMLMHNHMHLHLMMHLHMHMHMHH
                NLNNLLNMNNLMLMNLNHNNMLLMMNHLHNLNHMHNMNHLLMMLHHNHMHLMLMHHLHMMHHMH
ATTACK/CONTINUE/SHALLOW/DEEP        (REPORT X1)
      HHH       AAAADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
      HHM       AAAAADADADDDDDDDDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSDSDDDD
      MHH       AAAAADADADDDDDDDDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSDSDDDD
      HMM       ADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
      MHM       ADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
      MMM       DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDS
      LHM       DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDS
      LMM       AAAAAAAAAASSASASSSASSSSSSSSSSSSSSSSSSSSSSSSDSSSSDSDSDDDSSSDDDDDDD
      NHM       AAAAAAAAAASSASASSSASSSSSSSSSSSSSSSSSSSSSSSSDSSSSDSDSDDDSSSDDDDDDD
      NMM       DDSDDSDSSSDDDSDSDSSSDDDDDDDDDDDDDDDDDDSSSDSDSSSDSDSDDDSSSSSSSSSS
      NLL       SDSDSDSSDSDDSDSDDDSDDDDDDDSDSDSSSSSSSSSSDSDDDSSSSDSDSSDSSSDDSDDDS
ATTACK/CONTINUE GIVEN SHALLOW, NOT DETECTED    (REPORT X2)
      HHH       AAAAAAAAAACAAAAAA...CCCAAA............CCCCCC...CCCCCCCCCCCCCCCC
      HHM       AAAAAAACACACACACC...CACCCC............CCCCCC...CCCCCCCCCCCCCCCC
      MHH       AAAAAAACACACACACC...CACCCC............CCCCCC...CCCCCCCCCCCCCCCC
      HMM       AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
      MHM       AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
      MMM       AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
      LHM       AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
      LMM       AAAAAAAAAACAAAAAA...CCCAAA............CCCCCC...CCCCCCCCCCCCCCCC
      NHM       AAAAAAAAAACAAAAAA...CCCAAA............CCCCCC...CCCCCCCCCCCCCCCC
      NMM       CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
      NLL       CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN SHALLOW, DETECTED         (REPORT X2)
      HHH       AAAAAAAAAACAAAAAA...CCCAAA............CCCCCC...CCCCCCCCCCCCCCCC
      HHM       AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
      MHH       AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
      HMM       AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
      MHM       AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
      MMM       AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
      LHM       AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
      LMM       CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
      NHM       CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
      NMM       CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
      NLL       CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN DEEP, NOT DETECTED       ATTACK/CONTINUE GIVEN DEEP, DETECTED
                HMLN                                            HMLN
                HMLL               (REPORT X3)                  HMLL
                HMLN                                            HMLN
      HHH       CCAA                               HHH          CCAA
      HHM       CCCA                               HHM          CCCA
      MHH       CCCA                               MHH          CCCA
      HMM       CCCA                               HMM          CCCA
      MHM       CCCA                               MHM          CCCA
      MMM       CCCA                               MMM          CCCA
      LHM       CCCA                               LHM          CCCA
      LMM       CCAA                               LMM          CCCA
      NHM       CCAA                               NHM          CCCA
      NMM       CCCC                               NMM          CCCC
      NLL       CCCC                               NLL          CCCC
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DECISION MAP        ENEMY LINE 2        ENCAMPMENT 4        (I=3, J=4)

                    NNNLNLLNNMLNNLLMMNNHLLMNMMNNLLHHNNMMHHLLHLMMNHHLLMMHHMLHHMMHMHHH
                    NNLNLNLNMNLLMNMNLNHNLMLMNMLHNHNLMHNHNMLHLMLMHNHMHLHLMMHLHMHMHMHH
                    NLNNLLNMNNLMLMNLNHNNMLLMMNHLHNLNHMHNMNHLLMMLHHNHMHLMLMHHLHMMHHMH
ATTACK/CONTINUE/SHALLOW/DEEP       (REPORT X1)
         HHH        AAAAAAAAAADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
         HHM        AAAAAAAAAAAAAAAAAAADDADADADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
         MHH        AAAAAAAAAAAAAAAAAAADDADADADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
         HMM        AAAAADADADDDADADDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
         MHM        AAAAADADADDDADADDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
         MMM        DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSDSSSSS
         LHM        DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSDSSSSS
         LMM        AAAAAAAAAAAAASASASASSSSSSSSASASSSSSSSSSSSSDSSSSDSDSDDDDDDDDDDDDD
         NHM        AAAAAAAAAAAAASASASASSSSSSSSASASSSSSSSSSSSSDSSSSDSDSDDDDDDDDDDDDD
         NMM        ASASSSSSASSSSSSSSSSSDSDSDSDSDSDDDSDSDDSSSDDDSSSDDDDDDDDDDDDDSSSS
         NLL        DDDDDDDDDDDDDDDDDSDSDDDDDDDDDDDDDDDDDDDDSDSDDDSSSDDDDDDDSSSDDDSSSS
ATTACK/CONTINUE GIVEN SHALLOW, NOT DETECTED    (REPORT X2)
         HHH        AAAAAAAAAAAAAAAAA...CACAAA............CCCCCC...CCCCCCCCCCCCCCCCC
         HHM        AAAAAAAAAAAAAAAAA...CACAAA............CCCCCC...CCCCCCCCCCCCCCCCC
         MHH        AAAAAAAAAAAAAAAAA...CACAAA............CCCCCC...CCCCCCCCCCCCCCCCC
         HMM        AAAAAAACACACACACC...CACCCC............CCCCCC...CCCCCCCCCCCCCCCCC
         MHM        AAAAAAACACACACACC...CACCCC............CCCCCC...CCCCCCCCCCCCCCCCC
         MMM        AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
         LHM        AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
         LMM        AAAAAAAAAACAAAAAA...CCCAAA............CCCCCC...CCCCCCCCCCCCCCCCC
         NHM        AAAAAAAAAACAAAAAA...CCCAAA............CCCCCC...CCCCCCCCCCCCCCCCC
         NMM        AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
         NLL        CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN SHALLOW, DETECTED        (REPORT X2)
         HHH        AAAAAAAAAACAAAAAA...CCCAAA............CCCCCC...CCCCCCCCCCCCCCCCC
         HHM        AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
         MHH        AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
         HMM        AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
         MHM        AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
         MMM        AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
         LHM        AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
         LMM        CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
         NHM        CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
         NMM        CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
         NLL        CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN DEEP, NOT DETECTED        ATTACK/CONTINUE GIVEN DEEP, DETECTED
                    HMLN                                        HMLN
                    HMLL            (REPORT X3)                 HMLL
                    HMLN                                        HMLN
         HHH        CCAA                              HHH       CCAA
         HHM        CCAA                              HHM       CCCA
         MHH        CCAA                              MHH       CCCA
         HMM        CCCA                              HMM       CCCA
         MHM        CCCA                              MHM       CCCA
         MMM        CCCA                              MMM       CCCA
         LHM        CCCA                              LHM       CCCA
         LMM        CCAA                              LMM       CCCA
         NHM        CCAA                              NHM       CCCA
         NMM        CCCA                              NMM       CCCA
         NLL        CCCA                              NLL       CCCC
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DECISION MAP          ENEMY LINE 2          ENCAMPMENT 5          (I=3, J=3)

                      NNNLNLLNNMLNNLLMMNNHLLMNMMNNLLHHNNMMHHLLHLMMNHHLLMMHHMLHHMMHMHHH
                      NNLNLNLNMNLLMNMNLNHNLMLMNMLHNHNLMHNHNMLHLMLMHNHMHLHLMMHLHMHMHMH
                      NLNNLLNMNNLMLMNLNHNNMLLMMNHLHNLNHMHNMNHLLMMLHHNHMHLMLMHHLHMMHHMH
ATTACK/CONTINUE/SHALLOW/DEEP       (REPORT X1)
           HHH        AAAAAAAAAAAAAAAAADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
           HHM        AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDAAADDDDDSDDDSSSSSSD
           MHH        AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDAAADDDDDSDDDSSSSSSD
           HMM        AAAAAAAAAAAAAAAAAAAAADDAAADADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
           MHM        AAAAAAAAAAAAAAAAAAAAADDAAADADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
           MMM        ADADDDDDADDDDDDDDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDS
           LHM        ADADDDDDADDDDDDDDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDS
           LMM        AAAAAAAAAAAAAAAAAAAAASSSASASASASSSSSSSSSSSSSSSSSDSDSDDDDDDDDDDDD
           NHM        AAAAAAAAAAAAAAAAAAAAASSSASASASASSSSSSSSSSSSSSSSSDSDSDDDDDDDDDDDD
           NMM        AAAAAAAAAAAAAAAAAASASSSSASASASASSSSSSSSSSSSSSDSSSDSDSDDDDDDDDDDDD
           NLL        AAAAASASASSSSSSSSSASSSSSSSSSSSSSSSSSSSSSSSDSSSDSDSDDDSSSSDSSSSD
ATTACK/CONTINUE GIVEN SHALLOW, NOT DETECTED    (REPORT X2)
           HHH        AAAAAAAAAAAAAAAAA...AAAAAA.............CCCAAA...CCCCCCCCCCCCCCCCCC
           HHM        AAAAAAAAAAAAAAAAA...AAAAAA.............AAAAAA...AAAAAACAAACCCCCCC
           MHH        AAAAAAAAAAAAAAAAA...AAAAAA.............AAAAAA...AAAAAACAAACCCCCCC
           HMM        AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCCC
           MHM        AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCCC
           MMM        AAAAAAACACACACACC...CACCCC.............CCCCCC...CCCCCCCCCCCCCCCCCC
           LHM        AAAAAAACACACACACC...CACCCC.............CCCCCC...CCCCCCCCCCCCCCCCCC
           LMM        AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCCC
           NHM        AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCCC
           NMM        AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCCC
           NLL        AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN SHALLOW, DETECTED        (REPORT X2)
           HHH        AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCCC
           HHM        AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCCC
           MHH        AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCCC
           HMM        AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCCC
           MHM        AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCCC
           MMM        AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCCC
           LHM        AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCCC
           LMM        ACACCCCCACCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCCC
           NHM        ACACCCCCACCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCCC
           NMM        AAAAACACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCCC
           NLL        CCCCCCCCCCCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN DEEP, NOT DETECTED        ATTACK/CONTINUE GIVEN DEEP, DETECTED
                      HMLN                                        HMLN
                      HMLL            (REPORT X3)                 HMLL
                      HMLN                                        HMLN
           HHH        CCAA                           HHH          CCAA
           HHM        CAAA                           HHM          CCAA
           MHH        CAAA                           MHH          CCAA
           HMM        CCAA                           HMM          CCCA
           MHM        CCAA                           MHM          CCCA
           MMM        CCCA                           MMM          CCCA
           LHM        CCCA                           LHM          CCCA
           LMM        CCAA                           LMM          CCCA
           NHM        CCAA                           NHM          CCCA
           NMM        CCAA                           NMM          CCCA
           NLL        CCCA                           NLL          CCCC
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DECISION MAP          ENEMY LINE 2          ENCAMPMENT 6          (I=3, J=2)

                     NNNLNLLNNMLNNLLMMNNHLLMNMMNNLLHHNNMMHHLLHLMMNHHLLMMHHMLHHMMHMHHH
                     NNLNLNLNMNLLMNMNLNHNLMLMNHLHNHNLMHNHNMLHLMLMHNHMHLHLMHHLHMHMHMHH
                     NLNNLLNMNNLMLMNLNHNNMLLMMNHLHNLNHMHNMNHLLMMLHHNHMHLMLMHHLHMMHHMH
ATTACK/CONTINUE/SHALLOW/DEEP       (REPORT X1)
     HHH             AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDSDDDDDDDDD
     HHM             AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDAAADDDDDSDDDSSSDDDD
     MHH             AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDAAADDDDDSDDDSSSDDDD
     HMM             AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDAAADDDDDSDDDSSSDDDD
     MHM             AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDAAADDDDDSDDDSSSDDDD
     MMM             AAAAAAAAAAAAAAAAADADDDDADADADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
     LHM             AAAAAAAAAAAAAAAAADADDDDADADADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
     LMM             AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAASSSSSSAAASSSSSSSSSSSSSSSD
     NHM             AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAASSSSSSAAASSSSSSSSSSSSSSSD
     NMM             AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAASSSSSSAAASSSSSSSSSSSSDDDD
     NLL             AAAAAAAAAAAAAAAAAAAASASAAASASASSSSSSSSSSSSSSSSSSSSSSSDSSSDDDDDDD
ATTACK/CONTINUE GIVEN SHALLOW, NOT DETECTED    (REPORT X2)
     HHH             AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAACCCCCC
     HHM             AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAACCCCCC
     MHH             AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAACCCCCC
     HMM             AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAACAAACCCCCC
     MHM             AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAACAAACCCCCC
     MMM             AAAAAAAAAAAAAAAAA...CACAAA............CCCCCC...CCCCCCCCCCCCCCCC
     LHM             AAAAAAAAAAAAAAAAA...CACAAA............CCCCCC...CCCCCCCCCCCCCCCC
     LMM             AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAACAAACCCCCC
     NHM             AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAACAAACCCCCC
     NMM             AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAACAAACCCCCC
     NLL             AAAAAAAAAAAAAAAAA...AAAAAA............CCCAAA...CCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN SHALLOW, DETECTED        (REPORT X2)
     HHH             AAAAAAAAAAAAAAAAA...AAAAAA............CCCAAA...CCCCCCACCCCCCCCCC
     HHM             AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAACAAACCCCCC
     MHH             AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAACAAACCCCCC
     HMM             AAAAAAAAAAAAAAAAA...CACAAA............CCCCCC...CCCCCCCCCCCCCCCC
     MHM             AAAAAAAAAAAAAAAAA...CACAAA............CCCCCC...CCCCCCCCCCCCCCCC
     MMM             AAAAAAACACACACACC...CACCCC............CCCCCC...CCCCCCCCCCCCCCCC
     LHM             AAAAAAACACACACACC...CACCCC............CCCCCC...CCCCCCCCCCCCCCCC
     LMM             AAAAAAAAAACAAAAAA...CCCAAA............CCCCCC...CCCCCCCCCCCCCCCC
     NHM             AAAAAAAAAACAAAAAA...CCCAAA............CCCCCC...CCCCCCCCCCCCCCCC
     NMM             AAAAAAAAAAAAAAAAA...CACAAA............CCCCCC...CCCCCCCCCCCCCCCC
     NLL             AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN DEEP, NOT DETECTED       ATTACK/CONTINUE GIVEN DEEP, DETECTED
                     HMLN                                                 HMLN
                     HMLL              (REPORT X3)                        HMLL
                     HMLN                                                 HMLN
     HHH             CAAA                                  HHH            CCAA
     HHM             CAAA                                  HHM            CAAA
     MHH             CAAA                                  MHH            CAAA
     HMM             CAAA                                  HMM            CCAA
     MHM             CAAA                                  MHM            CCAA
     MMM             CCAA                                  MMM            CCCA
     LHM             CCAA                                  LHM            CCCA
     LMM             CAAA                                  LMM            CCAA
     NHM             CAAA                                  NHM            CCAA
     NMM             CAAA                                  NMM            CCAA
     NLL             CCAA                                  NLL            CCCA
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DECISION MAP           ENEMY LINE 2         ENCAMPMENT 7          (I=3, J=1)

                       NNNLNLLNNMLNNLLMMNNHLLMNMMNNLLHHNNMMHHLLHLMMNHHLLMMHHMLHHMMHMMHHH
                       NNLNLNLNMNLLMNMNLNHNLMLMNMLHNHNLMHNHNMLHLMLMHNHMHLHLMMHLHMHMHMHH
                       NLNNLLNMNNLMLMNLNHNNMLLMMNHLHNLNHMHNMNHLLMMLHHNHMHLMLMHHLHMMHHMH
ATTACK/CONTINUE/SHALLOW/DEEP     (REPORT X1)
          HHH          AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
          HHM          AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
          MHH          AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
          HMM          AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
          MHM          AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
          MMM          AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
          LHM          AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
          LMM          AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
          NHM          AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
          NMM          AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
          NLL          AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
ATTACK/CONTINUE GIVEN SHALLOW, NOT DETECTED   (REPORT X2)
          HHH          AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          HHM          AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          MHH          AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          HMM          AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          MHM          AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          MMM          AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          LHM          AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          LMM          AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          NHM          AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          NMM          AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          NLL          AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
ATTACK/CONTINUE GIVEN SHALLOW, DETECTED       (REPORT X2)
          HHH          AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          HHM          AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          MHH          AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          HMM          AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          MHM          AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          MMM          AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          LHM          AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          LMM          AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          NHM          AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          NMM          AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          NLL          AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
ATTACK/CONTINUE GIVEN DEEP, NOT DETECTED      ATTACK/CONTINUE GIVEN DEEP, DETECTED
                       HMLN                                             HMLN
                       HMLL               (REPORT X3)                   HMLL
                       HMLN                                             HMLN
          HHH          AAAA                                  HHH        AAAA
          HHM          AAAA                                  HHM        AAAA
          MHH          AAAA                                  MHH        AAAA
          HMM          AAAA                                  HMM        AAAA
          MHM          AAAA                                  MHM        AAAA
          MMM          AAAA                                  MMM        AAAA
          LHM          AAAA                                  LHM        AAAA
          LMM          AAAA                                  LMM        AAAA
          NHM          AAAA                                  NHM        AAAA
          NMM          AAAA                                  NMM        AAAA
          NLL          AAAA                                  NLL        AAAA
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DECISION MAP          ENEMY LINE 3          ENCAMPMENT 1          (I=2, J=7)

                      NNNLNLLNNMLNNLLMMNNHLLMNMMNNLLHHNNMMHHLLHLMMNHHLLMMHHMLHHMMHMHHH
                      NNLNLNLNMNLLMNMNLNHNLMLMNMLHNHNLMHNHNMLHLMLMHNHMHLHLMMHLHMHMHMHH
                      NLNNLLNMNNLMLMNLNHNNMLLMMNHLHNLNHMHNMNHLLMMLHHNHMHLMLMHHLHMMHHMH
ATTACK/CONTINUE/SHALLOW/DEEP        (REPORT X1)
          HHH         ASSSDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
          HHM         DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSSSS
          MHH         DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSSSS
          HMM         DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSDSDDDS
          MHM         DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSDSDDDS
          MMM         DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
          LHM         DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
          LMM         AAAAAAAAAASDADADDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSSSS
          NHM         AAAAAAAAAASDADADDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSSSS
          NMM         AAAASSSSASSSSSSSSSASDSDSDSDSDSDDDSDSDDSSSDDDSSSSDSDSSDSSSDDDSSSD
          NLL         DDDDDDDSSSSSDSDSSSSSDSDSDSSSSSSSSSSSSSSDSSSSSSSDSDSDDSSSSDDDSSSD
ATTACK/CONTINUE GIVEN SHALLOW, NOT DETECTED    (REPORT X2)
          HHH         AAAAAAAAAACAAAAAA...CCCAAA............CCCCCC...CCCCCCCCCCCCCCCCC
          HHM         AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          MHH         AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          HMM         AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          MHM         AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          MMM         AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          LHM         AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          LMM         AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          NHM         AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          NMM         AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          NLL         CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN SHALLOW, DETECTED            (REPORT X2)
          HHH         AAAAAAAAAACAAAAAA...CCCAAA............CCCCCC...CCCCCCCCCCCCCCCCC
          HHM         AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          MHH         AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          HMM         AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          MHM         AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          MMM         ACACCCCCACCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          LHM         ACACCCCCACCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          LMM         CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          NHM         CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          NMM         CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
          NLL         CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN DEEP, NOT DETECTED      ATTACK/CONTINUE GIVEN DEEP, DETECTED
                      HMLN                                        HMLN
                      HMLL              (REPORT X3)               HMLL
                      HMLN                                        HMLN
          HHH         CCAA                           HHH          CCAA
          HHM         CCCA                           HHM          CCCA
          MHH         CCCA                           MHH          CCCA
          HMM         CCCA                           HMM          CCCA
          MHM         CCCA                           MHM          CCCA
          MMM         CCCA                           MMM          CCCA
          LHM         CCCA                           LHM          CCCA
          LMM         CCCA                           LMM          CCCC
          NHM         CCCA                           NHM          CCCC
          NMM         CCCA                           NMM          CCCA
          NLL         CCCC                           NLL          CCCC
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DECISION MAP         ENEMY LINE 3         ENCAMPMENT 2          (I=2, J=6)

                     NNNLNLLNNMLNNLLMMNNHLLMNMMNNLLHHNNMMHHLLHLMMNHHLLMMHHMLHHMMHMHHH
                     NNLNLNLNMNLLMNMNLNHNLMLMNMLHNHNLMHNHNMLHLMLMHNHMHLHLMMHLHMHMHMHH
                     NLNNLLNMNNLMLMNLNHNNMLLMMNHLHNLNHMHNMNHLLMMLHHNHMHLMLMHHLHMMHHMH
ATTACK/CONTINUE/SHALLOW/DEEP       (REPORT X1)
        HHH          ASASDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
        HHM          ADADDDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
        MHH          ADADDDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
        HMM          ADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDS
        MHM          ADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDS
        MMM          DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSDSDDDS
        LHM          DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSDSDDDS
        LMM          AAAAAAAAASAADADADADDDDDDADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
        NHM          AAAAAAAAAASAADADADADDDDDDDADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
        NMM          AAAAASASASSSSSSSSASDSDSDSSSSSSSSSSSSDSDDDDSSSDDDDDDDSSSDDDSSSD
        NLL          SDDDDDDSSSDDDSDSDSDSDDDDSDSDSSSSSSSSSDSDDDDSSSDDDDDDDSSSDSDDDDS
ATTACK/CONTINUE GIVEN SHALLOW, NOT DETECTED    (REPORT X2)
        HHH          AAAAAAAAAACAAAAAA...CCCAAA............CCCCCC...CCCCCCCCCCCCCCCCC
        HHM          AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        MHH          AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        HMM          AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        MHM          AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        MMM          AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        LHM          AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        LMM          AAAAAAAAAACAAAAAA...CCCAAA............CCCCCC...CCCCCCCCCCCCCCCCC
        NHM          AAAAAAAAAACAAAAAA...CCCAAA............CCCCCC...CCCCCCCCCCCCCCCCC
        NMM          AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        NLL          CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN SHALLOW, DETECTED        (REPORT X2)
        HHH          AAAAAAAAAACAAAAAA...CCCAAA............CCCCCC...CCCCCCCCCCCCCCCCC
        HHM          AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        MHH          AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        HMM          AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        MHM          AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        MMM          AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        LHM          AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        LMM          CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        NHM          CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        NMM          CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
        NLL          CCCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN DEEP, NOT DETECTED      ATTACK/CONTINUE GIVEN DEEP, DETECTED
                     HMLN                                             HMLN
                     HMLL             (REPORT X3)                     HMLL
                     HMLN                                             HMLN
        HHH          CCAA                             HHH             CCAA
        HHM          CCCA                             HHM             CCCA
        MHH          CCCA                             MHH             CCCA
        HMM          CCCA                             HMM             CCCA
        MHM          CCCA                             MHM             CCCA
        MMM          CCCA                             MMM             CCCA
        LHM          CCCA                             LHM             CCCA
        LMM          CCAA                             LMM             CCCA
        NHM          CCAA                             NHM             CCCA
        NMM          CCCA                             NMM             CCCA
        NLL          CCCC                             NLL             CCCC
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DECISION MAP          ENEMY LINE 3          ENCAMPMENT 3          (I=2, J=5)

                      NNNLNLLNNMLNMLLMMNNHLLMNMMNNLLHHNNMMHHLLHLMMNHHLLMMHHMLHHMMHMHHH
                      NNLNLNLNHNLLMNMNLNHNLMLMNMLHNHNLMHNHNMLHLMLMHNHMHLHLMMHLHMHMHMHH
                      NLNNLLNMNNLMLMNLNHNNMLLMMNHLHNLNHMHNMNHLLMMLHHNHMHLMLMHHLHMMHHMH
ATTACK/CONTINUE/SHALLOW/DEEP        (REPORT X1)
            HHH       AAAAADADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
            HHM       AAAAAAAAAADDADADDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
            MHH       AAAAAAAAAADDADADDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
            HMM       AAAAADADADDDDDDDDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
            MHM       AAAAADADADDDDDDDDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
            MMM       ADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSDSDDDS
            LHM       ADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSDSDDDS
            LMM       AAAAAAAAAAAAAAAAAADADDDDDDDDADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
            NHM       AAAAAAAAAAAAAAAAAADADDDDDDDSADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
            NMM       AAAAASASASSSASASSSASSSSSDSSSSSSSSSSSSSSSSSDDDSSSSDSDSSDSSSSDSSSSS
            NLL       SDSDSDSSDSDDSDSDDDSDDDDDDSDSDSSSSSSSSSSDSDDDSSSSDSDSSDSSSDDSDDDS
ATTACK/CONTINUE GIVEN SHALLOW, NOT DETECTED    (REPORT X2)
            HHH       AAAAAAAAAACAAAAAA...CCCAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
            HHM       AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
            MHH       AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
            HMM       AAAAAAACACACACACC...CACCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
            MHM       AAAAAAACACACACACC...CACCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
            MMM       AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
            LHM       AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
            LMM       AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
            NHM       AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
            NMM       AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
            NLL       CCCCCCCCCCCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN SHALLOW, DETECTED         (REPORT X2)
            HHH       AAAAAAAAAACAAAAAA...CCCAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
            HHM       AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
            MHH       AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
            HMM       AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
            MHM       AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
            MMM       AAAAACACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
            LHM       AAAAACACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
            LMM       CCCCCCCCCCCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
            NHM       CCCCCCCCCCCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
            NMM       CCCCCCCCCCCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
            NLL       CCCCCCCCCCCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN DEEP, NOT DETECTED        ATTACK/CONTINUE GIVEN DEEP, DETECTED
                      HMLN                                        HMLN
                      HMLL               (REPORT X3)              HMLL
                      HMLN                                        HMLN
            HHH       CCAA                             HHH        CCAA
            HHM       CCAA                             HHM        CCCA
            MHH       CCAA                             MHH        CCCA
            HMM       CCCA                             HMM        CCCA
            MHM       CCCA                             MHM        CCCA
            MMM       CCCA                             MMM        CCCA
            LHM       CCCA                             LHM        CCCA
            LMM       CCAA                             LMM        CCCA
            NHM       CCAA                             NHM        CCCA
            NMM       CCCA                             NMM        CCCA
            NLL       CCCC                             NLL        CCCC
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DECISION MAP          ENEMY LINE 3        ENCAMPMENT 4          (I=2, J=4)

                      NMNLNLLNNMLNNLLMMNNHLLMNMMNNLLHHNNMMHHLLHLMMNHHLLMMHHMLHHMMHMHHH
                      NNLNLNLNMNLLMMMNLNHNLMLMNMLHNHNLMHNHNMLHLMLMHNHMHLHLMMHLHMHMHMHH
                      NLNNLLNMNNLMLMNLNHNNMLLMMNHLHNLNHMHNMNHLLMMLHHNHMHLMLMHHLHMMHHMH
ATTACK/CONTINUE/SHALLOW/DEEP        (REPORT X1)
        HHH           AAAAAAAAAADDDDDDDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
        HHM           AAAAAAAAAAAAAAAAAAAADDDAAAAAAAAADADADDDDDDDDDDDDDDDDDDDDDDDDDDDD
        MHH           AAAAAAAAAAAAAAAAAAAADDDAAAAAAAAADADADDDDDDDDDDDDDDDDDDDDDDDDDDDD
        HMM           AAAAAAAAAAAAAAAAAAAADDDADADADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
        MHM           AAAAAAAAAAAAAAAAAAAADDDADADADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
        MMM           AAAAADADADDDDDDDDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSDSDDDD
        LHM           AAAAADADADDDDDDDDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSDSDDDD
        LMM           AAAAAAAAAAAAAAAAAAAADDDAAAAAAAAADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
        NHM           AAAAAAAAAAAAAAAAAAAADDDAAAAAAAAADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
        NMM           AAAAAAAAAASSASASSSASDSDSDSSSSSSSSSSSSSSSSDDDSSSDDDDDDDSSSDDDDDD
        NLL           DDDDDDDDDDDDDDDDSDSDDDDDDDDDDDDDDDDDDSDSDDDSSSDDDDDDDSSSDDDSSSS
ATTACK/CONTINUE GIVEN SHALLOW, NOT DETECTED   (REPORT X2)
        HHH           AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
        HHM           AAAAAAAAAAAAAAAAA...AAAAAA.............CCCAAA...CCCCCCCCCCCCCCCCC
        MHH           AAAAAAAAAAAAAAAAA...AAAAAA.............CCCAAA...CCCCCCCCCCCCCCCCC
        HMM           AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
        MHM           AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
        MMM           AAAAAAACACACACACC...CACCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
        LHM           AAAAAAACACACACACC...CACCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
        LMM           AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
        NHM           AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
        NMM           AAAAAAAAAACAAAAAA...CCCAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
        NLL           CCCCCCCCCCCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN SHALLOW, DETECTED          (REPORT X2)
        HHH           AAAAAAAAAACAAAAAA...CCCAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
        HHM           AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
        MHH           AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
        HMM           AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
        MHM           AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
        MMM           AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
        LHM           AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
        LMM           ACACCCCCACCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
        NHM           ACACCCCCACCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
        NMM           ACACCCCCACCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
        NLL           CCCCCCCCCCCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN DEEP, NOT DETECTED     ATTACK/CONTINUE GIVEN DEEP, DETECTED
                      HMLN                                            HMLN
                      HMLL             (REPORT X3)                    HMLL
                      HMLN                                            HMLN
        HHH           CCAA                               HHH          CCAA
        HHM           CCAA                               HHM          CCCA
        MHH           CCAA                               MHH          CCCA
        HMM           CCAA                               HMM          CCCA
        MHM           CCAA                               MHM          CCCA
        MMM           CCCA                               MMM          CCCA
        LHM           CCCA                               LHM          CCCA
        LMM           CCAA                               LMM          CCCA
        NHM           CCAA                               NHM          CCCA
        NMM           CCAA                               NMM          CCCA
        NLL           CCCA                               NLL          CCCC
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DECISION MAP        ENEMY LINE 3        ENCAMPMENT 5        (I=2, J=3)

                    NNNLNLLNNMLNNLLMMNNHLLMNMMNNLLHHNNMMHHLLHLMMNHHLLMMHHMLHHMMHMHHH
                    NNLNLNLNMNLLMNMNLNHNLMLMNNLHNHNLMHNHNMLHLMLMHNHMHLHLMMHLHMHMHMHH
                    NLNNLLNMNNLMLMNLNHNNMLLMMNHLHNLNHMHNMNHLLMMLHHNHMHLMLMHHLHMMHHMH
ATTACK/CONTINUE/SHALLOW/DEEP      (REPORT X1)
        HHH         AAAAAAAAAAAAAAAAAAAADDDADADADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
        HHM         AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDAAADDDDDSDDDSSSDDDD
        MHH         AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDAAADDDDDSDDDSSSDDDD
        HMM         AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDAAADDDDDSDDDSSSSSSD
        MHM         AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDAAADDDDDSDDDSSSSSSD
        MMM         AAAAAAAAAAAAAAAAAAAADDDADADADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
        LHM         AAAAAAAAAAAAAAAAAAAADDDADADADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
        LMM         AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDAAADDDDDSDDDSSSSSSD
        NHM         AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDAAADDDDDSDDDSSSSSSD
        NMM         AAAAAAAAAAAAAAAAASASSSSSSSASASSSSSSSSSSSDDDSSSSDSDSSDSSSDDDDDD
        NLL         AAAAASASASSSSSSSSSASSSSSSSSSSSSSSSSSSSSSSSSDSSSSDSDSDDDSSSSDSSSSD
ATTACK/CONTINUE GIVEN SHALLOW, NOT DETECTED    (REPORT X2)
        HHH         AAAAAAAAAAAAAAAAA...AAAAAA.............CCCAAA...CCCCCCCCCCCCCCCCC
        HHM         AAAAAAAAAAAAAAAAA...AAAAAA.............AAAAAA...AAAAAACAAACCCCCCC
        MHH         AAAAAAAAAAAAAAAAA...AAAAAA.............AAAAAA...AAAAAACAAACCCCCCC
        HMM         AAAAAAAAAAAAAAAAA...AAAAAA.............CCCAAA...CCCCCCCCCCCCCCCCC
        MHM         AAAAAAAAAAAAAAAAA...AAAAAA.............CCCAAA...CCCCCCCCCCCCCCCCC
        MMM         AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
        LHM         AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
        LMM         AAAAAAAAAAAAAAAAA...AAAAAA.............CCCAAA...CCCCCCCCCCCCCCCCC
        NHM         AAAAAAAAAAAAAAAAA...AAAAAA.............CCCAAA...CCCCCCCCCCCCCCCCC
        NMM         AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
        NLL         AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN SHALLOW, DETECTED        (REPORT X2)
        HHH         AAAAAAAAAAAAAAAAA...AAAAAA.............CCCAAA...CCCCCCCCCCCCCCCCC
        HHM         AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
        MHH         AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
        HMM         AAAAAAACACACACACC...CACCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
        MHM         AAAAAAACACACACACC...CACCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
        MMM         AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
        LHM         AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
        LMM         AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
        NHM         AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
        NMM         AAAAACACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
        NLL         CCCCCCCCCCCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN DEEP, NOT DETECTED       ATTACK/CONTINUE GIVEN DEEP, DETECTED
                    HMLN                                            HMLN
                    HMLL              (REPORT X3)                   HMLL
                    HMLN                                            HMLN
        HHH         CCAA                                  HHH       CCAA
        HHM         CAAA                                  HHM       CCAA
        MHH         CAAA                                  MHH       CCAA
        HMM         CCAA                                  HMM       CCCA
        MHM         CCAA                                  MHM       CCCA
        MMM         CCAA                                  MMM       CCCA
        LHM         CCAA                                  LHM       CCCA
        LMM         CCAA                                  LMM       CCCA
        NHM         CCAA                                  NHM       CCCA
        NMM         CCAA                                  NMM       CCCA
        NLL         CCCA                                  NLL       CCCC
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DECISION MAP          ENEMY LINE 3        ENCAMPMENT 6         (I=2, J=2)

                      NNNLNLLNNMLNNLLMMNNHLLMNMMNNLLHHNNMMHHLLHLMMNHHLLMMHHMLHHMMHMHHH
                      NNLNLNLNMNLLMNMNLNHNLMLMNMLHNHNLMHNHNMLHLMLMHNHMHLHLMMHLHMHMHHMH
                      NLNNLLNMNNLMLMNLNHNNMLLMMNHLHNLNHMHNMNHLLMMLHHNHMHLMLMHHLHMMHHMH
ATTACK/CONTINUE/SHALLOW/DEEP      (REPORT X1)
          HHH         AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAASSSSSSD
          HHM         AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDDSDDDDDDDDD
          MHH         AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDDSDDDDDDDDD
          HMM         AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDDSDDDSSSDDDD
          MHM         AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDDSDDDSSSDDDD
          MMM         AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADADDDDAAADDDDDDSDDDSSSDDDD
          LHM         AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADADDDDAAADDDDDDSDDDSSSDDDD
          LMM         AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAASSSSSSAAASSSSSSSSSSSSSDDDD
          NHM         AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAASSSSSSAAASSSSSSSSSSSSSDDDD
          NMM         AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAASSSSSSSSSSSSSSSSSSSSSSSSSD
          NLL         AAAAAAAAAAAAAAAAAAAAAASASAAASASASSSSSSSSSSSSSSSSSSSDSSSSDDDDDDD
ATTACK/CONTINUE GIVEN SHALLOW, NOT DETECTED    (REPORT X2)
          HHH         AAAAAAAAAAAAAAAAA...AAAAAA.............AAAAAA...AAAAAAAAAACCCCCC
          HHM         AAAAAAAAAAAAAAAAA...AAAAAA.............AAAAAA...AAAAAAAAAACCCCCC
          MHH         AAAAAAAAAAAAAAAAA...AAAAAA.............AAAAAA...AAAAAAAAAACCCCCC
          HMM         AAAAAAAAAAAAAAAAA...AAAAAA.............AAAAAA...AAAAAAAAAACCCCCC
          MHM         AAAAAAAAAAAAAAAAA...AAAAAA.............AAAAAA...AAAAAAAAAACCCCCC
          MMM         AAAAAAAAAAAAAAAAA...AAAAAA.............AAAAAA...AAAAAACAAACCCCCC
          LHM         AAAAAAAAAAAAAAAAA...AAAAAA.............AAAAAA...AAAAAACAAACCCCCC
          LMM         AAAAAAAAAAAAAAAAA...AAAAAA.............AAAAAA...AAAAAACAAACCCCCC
          NHM         AAAAAAAAAAAAAAAAA...AAAAAA.............AAAAAA...AAAAAACAAACCCCCC
          NMM         AAAAAAAAAAAAAAAAA...AAAAAA.............CCCAAA...CCCCCCCCCCCCCCCC
          NLL         AAAAAAAAAAAAAAAAA...AAAAAA.............CCCAAA...CCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN SHALLOW, DETECTED         (REPORT X2)
          HHH         AAAAAAAAAAAAAAAAA...AAAAAA.............CCCAAA...CCCCCCACCCCCCCCC
          HHM         AAAAAAAAAAAAAAAAA...AAAAAA.............AAAAAA...AAAAAACAAACCCCCC
          MHH         AAAAAAAAAAAAAAAAA...AAAAAA.............AAAAAA...AAAAAACAAACCCCCC
          HMM         AAAAAAAAAAAAAAAAA...AAAAAA.............CCCAAA...CCCCCCCCCCCCCCCC
          MHM         AAAAAAAAAAAAAAAAA...AAAAAA.............CCCAAA...CCCCCCCCCCCCCCCC
          MMM         AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCC
          LHM         AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCC
          LMM         AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCC
          NHM         AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCC
          NMM         AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCC
          NLL         AAAAACACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN DEEP, NOT DETECTED       ATTACK/CONTINUE GIVEN DEEP, DETECTED
                      HMLN                                         HMLN
                      HMLL            (REPORT X3)                  HMLL
                      HMLN                                         HMLN
          HHH         CAAA                             HHH         CCAA
          HHM         CAAA                             HHM         CAAA
          MHH         CAAA                             MHH         CAAA
          HMM         CAAA                             HMM         CCAA
          MHM         CAAA                             MHM         CCAA
          MMM         CAAA                             MMM         CCAA
          LHM         CAAA                             LHM         CCAA
          LMM         CAAA                             LMM         CCAA
          NHM         CAAA                             NHM         CCAA
          NMM         CCAA                             NMM         CCCA
          NLL         CCAA                             NLL         CCCA
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DECISION MAP         ENEMY LINE 3         ENCAMPMENT 7          (I=2, J=1)

                     NNNLNLLNNMLNNLLMMNNHLLMNMMNNLLHHNNMMHHLLHLMMNHHLLMMHHMLHHMMHMHHH
                     NNLNLNLNMNNLLMNMNLNHNLMLMNMLHNHNLMHNHNMLHLMLMHNHMHLHLMMHLHMHMHMHH
                     NLNNLLNMNNLMLMNLNHNNMLLMMNHLHNLNHMHNMNHLLMMLHHNHMHLMLMHHLHMMHHHMH
ATTACK/CONTINUE/SHALLOW/DEEP         (REPORT X1)
          HHH        AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
          HHM       |AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
          MHH        AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
          HMM        AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
          MHM        AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
          MMM        AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
          LHM        AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
          LMM        AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
          NHM        AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
          NMM        AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
          NLL        AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
ATTACK/CONTINUE GIVEN SHALLOW, NOT DETECTED    (REPORT X2)
          HHH        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          HHM        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          MHH        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          HMM        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          MHM        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          MMM        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          LHM        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          LMM        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          NHM        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          NMM        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          NLL        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
ATTACK/CONTINUE GIVEN SHALLOW, DETECTED        (REPORT X2)
          HHH        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          HHM        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          MHH        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          HMM        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          MHM        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          MMM        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          LHM        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          LMM        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          NHM        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          NMM        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
          NLL        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
ATTACK/CONTINUE GIVEN DEEP, NOT DETECTED    ATTACK/CONTINUE GIVEN DEEP, DETECTED
                     HMLN                                           HMLN
                     HMLL           (REPORT X3)                     HMLL
                     HMLN                                           HMLN
          HHH        AAAA                             HHH           AAAA
          HHM        AAAA                             HHM           AAAA
          MHH        AAAA                             MHH           AAAA
          HMM        AAAA                             HMM           AAAA
          MHM        AAAA                             MHM           AAAA
          MMM        AAAA                             MMM           AAAA
          LHM        AAAA                             LHM           AAAA
          LMM        AAAA                             LMM           AAAA
          NHM        AAAA                             NHM           AAAA
          NMM        AAAA                             NMM           AAAA
          NLL        AAAA                             NLL           AAAA
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DECISION MAP        ENEMY LINE 4        ENCAMPMENT 1        (I=1, J=7)

                    NNNLNLLNNMLNNLLMMNNHLLMNMMNNLLHHNNMMHHLLHLMMNHHLLMMHHMLHHMMHMHHH
                    NNLNLNLNMNLLMNMNLNHNLMLMNMLHNHNLMHNHNMLHLMLMHNHMHLHLMMHLHMHMHMHH
                    NLNNLLNMNNLMLMNLNHNNMLLMMNHLHNLNHMHNMNHLLMMLHHNHMHLMLMHHLHMMHHMH
ATTACK/CONTINUE/SHALLOW/DEEP     (REPORT X1)
          HHH       ASSSDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
          HHM       DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
          MHH       DDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
          HMM       ADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSSSS
          MHM       ADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSSSS
          MMM       ADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSDSSSD
          LHM       ADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSSSD
          LMM       AAAAAAAAAASAAAAAADADDDDDDDADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
          NHM       AAAAAAAAAASAAAAAADADDDDDDDADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
          NMM       AAAAAAAAAASDADADDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
          NLL       AAAASSSSASSSSSSSSDSDSSSSDSDSDDDSDSDDDSDSDSDDDSDSDDDSSSDDDDDD
ATTACK/CONTINUE GIVEN SHALLOW, NOT DETECTED    (REPORT X2)
          HHH       AAAAAAAAAACAAAAAA...CCCAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
          HHM       AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          MHH       AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          HMM       AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          MHM       AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          MMM       AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          LHM       AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          LMM       AAAAAAAAAACAAAAAA...CCCAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
          NHM       AAAAAAAAAACAAAAAA...CCCAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
          NMM       AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          NLL       AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN SHALLOW, DETECTED        (REPORT X2)
          HHH       AAAAAAAAAACAAAAAA...CCCAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
          HHM       AAAAACACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          MHH       AAAAACACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          HMM       AAAAACACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          MHM       AAAAACACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          MMM       AAAAACACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          LHM       AAAAACACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          LMM       CCCCCCCCCCCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          NHM       CCCCCCCCCCCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          NMM       CCCCCCCCCCCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          NLL       CCCCCCCCCCCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN DEEP, NOT DETECTED        ATTACK/CONTINUE GIVEN DEEP, DETECTED
                    HMLN                                           HMLN
                    HMLL             (REPORT X3)                   HMLL
                    HMLN                                           HMLN
          HHH       CCAA                               HHH         CCAA
          HHM       CCCA                               HHM         CCCA
          MHH       CCCA                               MHH         CCCA
          HMM       CCCA                               HMM         CCCA
          MHM       CCCA                               MHM         CCCA
          MMM       CCCA                               MMM         CCCA
          LHM       CCCA                               LHM         CCCA
          LMM       CCAA                               LMM         CCCA
          NHM       CCAA                               NHM         CCCA
          NMM       CCCA                               NMM         CCCA
          NLL       CCCA                               NLL         CCCC
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DECISION MAP          ENEMY LINE 4        ENCAMPMENT 2          (I=1, J=6)

                      NNNLNLLNNMLNNLLMMNNHLLMNMMNNLLHHNNMMHHLLHLMMNHHLLMMHHMLHHMMHMHHH
                      NNLNLNLNMNLLMNMNLNHNLMLMNMLHNHNLMHNHNMLHLMLMHNHMHLHLMMHLHMHMHMHH
                      NLNNLLNMNNLMLMNLNHNNMLLMMNHLHNLNHMHNMNHLLMMLHHNHMHLMLMHHLHMMHHMH
ATTACK/CONTINUE/SHALLOW/DEEP      (REPORT X1)
          HHH         AAAADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
          HHM         AAAAADADADDDDDDDDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSDSSSSS
          MHH         AAAAADADADDDDDDDDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSDSSSSS
          HMM         AAAAADADADDDDDDDDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
          MHM         AAAAADADADDDDDDDDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
          MMM         AAAAADADADDDDDDDDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSDSSSSS
          LHM         AAAAADADADDDDDDDDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDSDSSSSS
          LMM         AAAAAAAAAAAAAAAAAADADDDDDDDDADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
          NHM         AAAAAAAAAAAAAAAAAADADDDDDDDDADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
          NMM         AAAAAAAAAASDADADDDADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
          NLL         AAAAASASASSSSSSSSSASSSSSSSSSSSSSSSSSSSSSSSSDSSSSDSDSDDDSSSSDSSSSD
ATTACK/CONTINUE GIVEN SHALLOW, NOT DETECTED     (REPORT X2)
          HHH         AAAAAAAAAACAAAAAA...CCCAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
          HHM         AAAAAAACACACACACC...CACCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          MHH         AAAAAAACACACACACC...CACCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          HMM         AAAAAAACACACACACC...CACCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          MHM         AAAAAAACACACACACC...CACCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          MMM         AAAAAAACACACACACC...CACCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          LHM         AAAAAAACACACACACC...CACCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          LMM         AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
          NHM         AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
          NMM         AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          NLL         AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN SHALLOW, DETECTED         (REPORT X2)
          HHH         AAAAAAAAAACAAAAAA...CCCAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
          HHM         AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          MHH         AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          HMM         AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          MHM         AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          MMM         AAAAACACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          LHM         AAAAACACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          LMM         CCCCCCCCCCCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          NHM         CCCCCCCCCCCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          NMM         CCCCCCCCCCCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
          NLL         CCCCCCCCCCCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN DEEP, NOT DETECTED        ATTACK/CONTINUE GIVEN DEEP, DETECTED
                      HMLN                                        HMLN
                      HMLL            (REPORT X3)                 HMLL
                      HMLN                                        HMLN
          HHH         CCAA                             HHH        CCAA
          HHM         CCCA                             HHM        CCCA
          MHH         CCCA                             MHH        CCCA
          HMM         CCCA                             HMM        CCCA
          MHM         CCCA                             MHM        CCCA
          MMM         CCCA                             MMM        CCCA
          LHM         CCCA                             LHM        CCCA
          LMM         CCAA                             LMM        CCCA
          NHM         CCAA                             NHM        CCCA
          NMM         CCCA                             NMM        CCCA
          NLL         CCCA                             NLL        CCCC
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DECISION MAP          ENEMY LINE 4          ENCAMPMENT 3          (I=1, J=5)

                      NNNLNLLNNMLNNLLMMNNHLLMNMMNNLLHHNNMMHHLLHLMMNHHLLMMHHMLHHMMHMHHH
                      NNLNLNLNMNLLMNMNLNHNLMLMNMLHNHNLMHNHNMLHLMLMHNHMHLHLMMHLHMHMHMHH
                      NLNNLLNMNNLMLMNLNHNNMLLMMNHLHNLNHMHNMNHLLMMLHHNHMHLMLMHHLHMMHHMH
ATTACK/CONTINUE/SHALLOW/DEEP        (REPORT X1)
         HHH          AAAAAAADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
         HHM          AAAAAAAAAAAAAAAAADADDDDDDDDADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
         MHH          AAAAAAAAAAAAAAAAADADDDDDDDDADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
         HMM          AAAAAAAAAAAAAAAAADADDDDDDDDADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
         MHM          AAAAAAAAAAAAAAAAADADDDDDDDDADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
         MMM          AAAAAAAAAADAADADADADDDDDDDDADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
         LHM          AAAAAAAAAADAADADADADDDDDDDDADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
         LMM          AAAAAAAAAAAAAAAAAAAAADDDAAADADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
         NHM          AAAAAAAAAAAAAAAAAAAAADDDAAADADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
         NMM          AAAAAAAAAAAAAAAAADADDDDDDDDADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
         NLL          AAAAAAASASSSSSSSSSASSSSSSSSSSSSSSSSSSSSDSDSDSSSSDSDSDDSSSDDDSSSD
ATTACK/CONTINUE GIVEN SHALLOW, NOT DETECTED    (REPORT X2)
         HHH          AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
         HHM          AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
         MHH          AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
         HMM          AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
         MHM          AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
         MMM          AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
         LHM          AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
         LMM          AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
         NHM          AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
         NMM          AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
         NLL          AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN SHALLOW, DETECTED        (REPORT X2)
         HHH          AAAAAAAAAAACAAAAAA...CCCAAA.............CCCCCC...CCCCCCCCCCCCCCCCC
         HHM          AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
         MHH          AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
         HMM          AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
         MHM          AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
         MMM          AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
         LHM          AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
         LMM          ACACCCCCACCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
         NHM          ACACCCCCACCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
         NMM          ACACCCCCACCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
         NLL          CCCCCCCCCCCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN DEEP, NOT DETECTED        ATTACK/CONTINUE GIVEN DEEP, DETECTED
                      HMLN                                                  HMLN
                      HMLL              (REPORT X3)                         HMLL
                      HMLN                                                  HMLN
         HHH          CCAA                                   HHH            CCAA
         HHM          CCAA                                   HHM            CCCA
         MHH          CCAA                                   MHH            CCCA
         HMM          CCAA                                   HMM            CCCA
         MHM          CCAA                                   MHM            CCCA
         MMM          CCAA                                   MMM            CCCA
         LHM          CCAA                                   LHM            CCCA
         LMM          CCAA                                   LMM            CCCA
         NHM          CCAA                                   NHM            CCCA
         NMM          CCAA                                   NMM            CCCA
         NLL          CCCA                                   NLL            CCCC
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DECISION MAP          ENEMY LINE 4          ENCAMPMENT 4          (I=1, J=4)

                 NNNLNLLNNMLNNLLMMNNHLLMNMMNNLLHHNNMMHHLLHLMMNHHLLMMHHMLHHMMHMHHH
                 NNLNLNLNMNLLMNMNLNHNLM'.MNMLHNHNLMHNHNMLHLMLMHNHMHLHLMMHLHMHMHMHH
                 NLNNLLNMNNLMLMNLNHNNMLLMMNHLHNLNHMHNMNHLLMMLHHNHMHLMLMHHLHMMHHMH
ATTACK/CONTINUE/SHALLOW/DEEP      (REPORT X1)
       HHH       AAAAAAAAAAAADADADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
       HHM       AAAAAAAAAAAAAAAAAAADADAAAAAAAAAAAAAAADDDDDAAADDDDDDSDDDSSSSSSD
       MHH       AAAAAAAAAAAAAAAAAAADADAAAAAAAAAAAAAAADDDDDAAADDDDDDSDDDSSSSSSD
       HMM       AAAAAAAAAAAAAAAAAAADADAAAAAAAAAAAAAAADDDDDAAADDDDDDSDDDSSSSSSD
       MHM       AAAAAAAAAAAAAAAAAAADADAAAAAAAAAAAAAAADDDDDAAADDDDDDSDDDSSSSSSD
       MMM       AAAAAAAAAAAAAAAAAAADDDAAAAAAAAAADADADDDDDDDDDDDDDDDDDDDDDDDDD
       LHM       AAAAAAAAAAAAAAAAAAADDDAAAAAAAAAADADADDDDDDDDDDDDDDDDDDDDDDDDD
       LMM       AAAAAAAAAAAAAAAAAAADADAAAAAAAAAAAAAAADDDDDDDDDDDDDDSDDDSSSDDDD
       NHM       AAAAAAAAAAAAAAAAAAADADAAAAAAAAAAAAAAADDDDDDDDDDDDDDSDDDSSSDDDD
       NMM       AAAAAAAAAAAAAAAAAAADDDAAADADADDDDDDDDDDDDDDDDDDDDDDDDDDDDDDDD
       NLL       AAAAAAAAAASSASASSSASSSSSSSSSSSSSSSSSSSSDSSSSSSSSSSDSSSDDDDDD
ATTACK/CONTINUE GIVEN SHALLOW, NOT DETECTED   (REPORT X2)
       HHH       AAAAAAAAAAAAAAAA...AAAAAA............CCCAAA...CCCCCCCCCCCCCCCC
       HHM       AAAAAAAAAAAAAAAA...AAAAAA............CCCAAA...CCCCCCCCCCCCCCCC
       MHH       AAAAAAAAAAAAAAAA...AAAAAA............CCCAAA...CCCCCCCCCCCCCCCC
       HMM       AAAAAAAAAAAAAAAA...AAAAAA............CCCAAA...CCCCCCCCCCCCCCCC
       MHM       AAAAAAAAAAAAAAAA...AAAAAA............CCCAAA...CCCCCCCCCCCCCCCC
       MMM       AAAAAAAAAAAAAAAA...AAAAAA............CCCAAA...CCCCCCCCCCCCCCCC
       LHM       AAAAAAAAAAAAAAAA...AAAAAA............CCCAAA...CCCCCCCCCCCCCCCC
       LMM       AAAAAAAAAAAAAAAA...AAAAAA............CCCAAA...CCCCCCCCCCCCCCCC
       NHM       AAAAAAAAAAAAAAAA...AAAAAA............CCCAAA...CCCCCCCCCCCCCCCC
       NMM       AAAAAAAAAAAAAAAA...CACAAA............CCCCCC...CCCCCCCCCCCCCCCC
       NLL       AAAAAAAAAACAAAAA...CCCAAA............CCCCCC...CCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN SHALLOW, DETECTED         (REPORT X2)
       HHH       AAAAAAAAAAAAAAAA...CACAAA............CCCCCC...CCCCCCCCCCCCCCCC
       HHM       AAAAAAACACACACACC...CACCCC............CCCCCC...CCCCCCCCCCCCCCCC
       MHH       AAAAAAACACACACACC...CACCCC............CCCCCC...CCCCCCCCCCCCCCCC
       HMM       AAAAAAACACACACACC...CACCCC............CCCCCC...CCCCCCCCCCCCCCCC
       MHM       AAAAAAACACACACACC...CACCCC............CCCCCC...CCCCCCCCCCCCCCCC
       MMM       AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
       LHM       AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
       LMM       AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
       NHM       AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
       NMM       AAAAACACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
       NLL       CCCCCCCCCCCCCCCC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN DEEP, NOT DETECTED       ATTACK/CONTINUE GIVEN DEEP, DETECTED
                 HMLN                                              HMLN
                 HMLL              (REPORT X3)                     HMLL
                 HMLN                                              HMLN
       HHH       CCAA                              HHH             CCAA
       HHM       CCAA                              HHM             CCCA
       MHH       CCAA                              MHH             CCCA.
       HMM       CCAA                              HMM             CCCA
       MHM       CCAA                              MHM             CCCA
       MMM       CCAA                              MMM             CCCA
       LHM       CCAA                              LHM             CCCA
       LMM       CCAA                              LMM             CCCA
       NHM       CCAA                              NHM             CCCA
       NMM       CCAA                              NMM             CCCA
       NLL       CCAA                              NLL             CCCA
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DECISION MAP        ENEMY LINE 4        ENCAMPMENT 5        (I=1, J=3)

                  NNNLNLLNNMLNNLLMMNNHLLMNMMNNLLHHNNMMHHLLHLMMNHHLLMMHHMLHHMMHMHHH
                  NHLNLNLNMNLLMNMNLNHNLMLMNMLHNHNLMHNHNMLHLMLMHNHMHLHLMMHLHMHMHMHH
                  NLNNLLNMNNLMLMNLNHNNMLLMMNHLHNLNHMHNMNHLLMMLHHNHMHLMLMHHLHMMHHMH
ATTACK/CONTINUE/SHALLOW/DEEP      (REPORT X1)
        HHH       AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDDDDDDDDDDDDDDDDDDDD
        HHM       AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDAAADDDDDSDDDSSSDDDD
        MHH       AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDAAADDDDDSDDDSSSDDDD
        HMM       AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDAAADDDDDSDDDSSSDDDD
        MHM       AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDAAADDDDDSDDDSSSDDDD
        MMM       AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDAAADDDDDSDDDSSSDDDD
        LHM       AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDAAADDDDDSDDDSSSDDDD
        LMM       AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDAAADDDDDSDDDSSSSSSD
        NHM       AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDAAADDDDDSDDDSSSSSSD
        NMM       AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDAAADDDDDSDDDSSSSSSD
        NLL       AAAAAAAAAAAAAAAAAASASSSSSSSSASASSSSSSSSSSSSDSSSSDSDSDDDSSSDDDDDD
ATTACK/CONTINUE GIVEN SHALLOW, NOT DETECTED     (REPORT X2)
        HHH       AAAAAAAAAAAAAAAAA...AAAAAA.............CCCAAA...CCCCCCACCCCCCCCC
        HHM       AAAAAAAAAAAAAAAAA...AAAAAA.............AAAAAA...AAAAAACAAACCCCCC
        MHH       AAAAAAAAAAAAAAAAA...AAAAAA.............AAAAAA...AAAAAACAAACCCCCC
        HMM       AAAAAAAAAAAAAAAAA...AAAAAA.............AAAAAA...AAAAAACAAACCCCCC
        MHM       AAAAAAAAAAAAAAAAA...AAAAAA.............AAAAAA...AAAAAACAAACCCCCC
        MMM       AAAAAAAAAAAAAAAAA...AAAAAA.............AAAAAA...AAAAAACAAACCCCCC
        LHM       AAAAAAAAAAAAAAAAA...AAAAAA.............AAAAAA...AAAAAACAAACCCCCC
        LMM       AAAAAAAAAAAAAAAAA...AAAAAA.............AAAAAA...AAAAAACAAACCCCCC
        NHM       AAAAAAAAAAAAAAAAA...AAAAAA.............AAAAAA...AAAAAACAAACCCCCC
        NMM       AAAAAAAAAAAAAAAAA...AAAAAA.............CCCAAA...CCCCCCCCCCCCCCCC
        NLL       AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN SHALLOW, DETECTED          (REPORT X2)
        HHH       AAAAAAAAAAAAAAAAA...AAAAAA.............CCCAAA...CCCCCCCCCCCCCCCC
        HHM       AAAAAAAAAAAAAAAAA...AAAAAA.............CCCAAA...CCCCCCCCCCCCCCCC
        MHH       AAAAAAAAAAAAAAAAA...AAAAAA.............CCCAAA...CCCCCCCCCCCCCCCC
        HMM       AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCC
        MHM       AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCC
        MMM       AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCC
        LHM       AAAAAAAAAAAAAAAAA...CACAAA.............CCCCCC...CCCCCCCCCCCCCCCC
        LMM       AAAAAAAAAACAAAAAA...CCCAAA.............CCCCCC...CCCCCCCCCCCCCCCC
        NHM       AAAAAAAAAACAAAAAA...CCCAAA.............CCCCCC...CCCCCCCCCCCCCCCC
        NMM       AAAAAAACACCCACACC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCC
        NLL       CCCCCCCCCCCCCCCCC...CCCCCC.............CCCCCC...CCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN DEEP, NOT DETECTED      ATTACK/CONTINUE GIVEN DEEP, DETECTED
                  HMLN                                          HMLN
                  HMLL               (REPORT X3)                HMLL
                  HMLN                                          HMLN
        HHH       CCAA                               HHH        CCAA
        HHM       CAAA                               HHM        CCAA
        MHH       CAAA                               MHH        CCAA
        HMM       CAAA                               HMM        CCAA
        MHM       CAAA                               MHM        CCAA
        MMM       CAAA                               MMM        CCAA
        LHM       CAAA                               LHM        CCAA
        LMM       CAAA                               LMM        CCAA
        NHM       CAAA                               NHM        CCAA
        NMM       CCAA                               NMM        CCCA
        NLL       CCAA                               NLL        CCCA
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DECISION MAP        ENEMY LINE 4        ENCAMPMENT 6        (I=1, J=2)

                    NNNLNLLNNMLNNLLMMNNHLLMNMMNNLLHHNNMMHHLLHLMMNHHLLMMHHMLHHMMHMHHH
                    NNLNLNLNMNLLMNMNLNHNLMLMNMLHNHNLMHNHNMLHLMLMHNHMHLHLMMHLHMHMHMHH
                    NLNNLLNMNNLMLMNLNHNNMLLMMNHLHNLNHMHNMNHLLMMLHHNHMHLMLMHHLHMMHHMH
ATTACK/CONTINUE/SHALLOW/DEEP        (REPORT X1)
     HHH            AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
     HHM            AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDSDDDDDDDDDD
     MHH            AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDSDDDDDDDDDD
     HMM            AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDSDDDDSDDDDD
     MHM            AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDSDDDDSDDDDD
     MMM            AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDSDDDSSSDDDD
     LHM            AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDSDDDSSSDDDD
     LMM            AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDSDDDSSSDDDD
     NHM            AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADDDDDSDDDSSSDDDD
     NMM            AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAADAAAADDDDDSDDDSSSDDDD
     NLL            AAAAAAAAAAAAAAAAAAAAAAAAAAAAAASASASSSSSSSSSSSSSSSSSSSSSSDDDD
ATTACK/CONTINUE GIVEN SHALLOW, NOT DETECTED    (REPORT X2)
     HHH            AAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAA
     HHM            AAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAACCCCCC
     MHH            AAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAACCCCCC
     HMM            AAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAACCCCCC
     MHM            AAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAACCCCCC
     MMM            AAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAACCCCCC
     LHM            AAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAACCCCCC
     LMM            AAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAACCCCCC
     NHM            AAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAACCCCCC
     NMM            AAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAACAAACCCCCC
     NLL            AAAAAAAAAAAAAAAA...AAAAAA............CCCAAA...CCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN SHALLOW, DETECTED          (REPORT X2)
     HHH            AAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAACCCCCC
     HHM            AAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAACAAACCCCCC
     MHH            AAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAACAAACCCCCC
     HMM            AAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAACAAACCCCCC
     MHM            AAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAACAAACCCCCC
     MMM            AAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAACAAACCCCCC
     LHM            AAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAACAAACCCCCC
     LMM            AAAAAAAAAAAAAAAA...AAAAAA............CCCAAA...CCCCCCCCCCCCCCCC
     NHM            AAAAAAAAAAAAAAAA...AAAAAA............CCCAAA...CCCCCCCCCCCCCCCC
     NMM            AAAAAAAAAAAAAAAA...CACAAA............CCCCCC...CCCCCCCCCCCCCCCC
     NLL            AAAAAAACACCCACACC...CCCCCC............CCCCCC...CCCCCCCCCCCCCCCC
ATTACK/CONTINUE GIVEN DEEP, NOT DETECTED         ATTACK/CONTINUE GIVEN DEEP, DETECTED
                    HMLN                                                    HMLN
                    HMLL                (REPORT X3)                         HMLL
                    HMLN                                                    HMLN
     HHH            AAAA                                      HHH           CAAA
     HHM            CAAA                                      HHM           CAAA
     MHH            CAAA                                      MHH           CAAA
     HMM            CAAA                                      HMM           CAAA
     MHM            CAAA                                      MHM           CAAA
     MMM            CAAA                                      MMM           CAAA
     LHM            CAAA                                      LHM           CAAA
     LMM            CAAA                                      LMM           CCAA
     NHM            CAAA                                      NHM           CCAA
     NMM            CAAA                                      NMM           CCAA
     NLL            CCAA                                      NLL           CCCA
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DECISION MAP          ENEMY LINE 4          ENCAMPMENT 7          (I=1,  J=1)

                      NNNLNLLNNMLNNLLMMNNHLLMNMMNNLLHHNNMMHHLLHLMMNHHLLMMHHMLHHMMHMHHH
                      NNLNLNLNMNLLMNMNLNHNLMLMNMLHNHNLMHNHNMLHLMLMHNHMHLHLMMHLHMHMHMHH
                      NLNNLLNMNNLMLMNLNHNNMLLMMNHLHNLNHMHNMNHLLMMLHHNHMHLMLMHHLHMMHHMH
ATTACK/CONTINUE/SHALLOW/DEEP      (REPORT X1)
           HHH        AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
           HHM        AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
           MHH        AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
           HMM        AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
           MHM        AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
           MMM        AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
           LHM        AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
           LMM        AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
           NHM        AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
           NMM        AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
           NLL        AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
ATTACK/CONTINUE GIVEN SHALLOW, NOT DETECTED    (REPORT X2)
           HHH        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
           HHM        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
           MHH        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
           HMM        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
           MHM        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
           MMM        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
           LHM        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
           LMM        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
           NHM        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
           NMM        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
           NLL        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
ATTACK/CONTINUE GIVEN SHALLOW, DETECTED       (REPORT X2)
           HHH        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
           HHM        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
           MHH        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
           HMM        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
           MHM        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
           MMM        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
           LHM        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
           LMM        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
           NHM        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
           NMM        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
           NLL        AAAAAAAAAAAAAAAAA...AAAAAA............AAAAAA...AAAAAAAAAAAAAAAAA
ATTACK/CONTINUE GIVEN DEEP, NOT DETECTED       ATTACK/CONTINUE GIVEN DEEP, DETECTED
                      HMLN                                              HMLN
                      HMLL           (REPORT X3)                        HMLL
                      HMLN                                              HMLN
           HHH        AAAA                                  HHH         AAAA
           HHM        AAAA                                  HHM         AAAA
           MHH        AAAA                                  MHH         AAAA
           HMM        AAAA                                  HMM         AAAA
           MHM        AAAA                                  MHM         AAAA
           MMM        AAAA                                  MMM         AAAA
           LHM        AAAA                                  LHM         AAAA
           LMM        AAAA                                  LMM         AAAA
           NHM        AAAA                                  NHM         AAAA
           NMM        AAAA                                  NMM         AAAA
           NLL        AAAA                                  NLL         AAAA
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