Using Relevance Feedback and Ranking in Interactive Searching

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Abstract

We present results of a study in which 50 searchers, of varying degrees of experience in information retrieval (IR), each performed searches on two TREC-4 adhoc interactive track topics, using a simple interface to the INQUERY retrieval engine. The foci of our study were: the relationships between the users' models and experience of IR, and their performance in the TREC-4 adhoc task while using a best-match IR system with relevance feedback; the understanding, use and utility of relevance feedback and ranking in interactive IR; and, the evaluation of interactive IR.† *

1. Introduction

In this paper, we report on some preliminary results of our TREC-4 study. We first present a description of our investigative design, then present and discuss some results from the study, and finally draw some conclusions about the presentation and use of relevance feedback and ranking for end users, and about the evaluation of interactive IR.

In our TREC-3 study (Koenemann et al., 1995), we noted that there appeared to be a relationship between the kind and strength of the model of IR held by our expert searchers, and their behavior (both performance in terms of effectiveness measures, and patterns of interaction in their searches) when constructing a routing query using a system which offered ranked output and relevance feedback, in a full-text environment. But because we had relatively little information about their models of IR, and because the searchers were relatively homogeneous in terms of their experience with IR systems, we were unable to follow up on this observation. We therefore designed our TREC-4 study explicitly to consider this issue, and also to consider the related issue of how people with little or no experience of ranked output, relevance feedback IR would understand and use these features.

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2. Methods

2.1 Subjects

We recruited fifty volunteers to participate as searchers in our study. The subjects were chosen by circulating a recruitment announcement among the faculty and graduate students of the School of Communication, Information & Library Studies at Rutgers University, among the community of information professionals in New Jersey, and to several information-intensive research companies in New Jersey. The general demographic characteristics of the volunteers are given in section II of the Interactive System Description, together with various measures of their experience with IR systems. Three of the volunteers had also participated in our TREC-3 study, and therefore had some experience with the INQUERY retrieval engine, although not with the specific interface and features which we used in TREC-4.

2.2 System

We used the INQUERY retrieval engine (version 2.1p3) (cf. Callan, et al., 1992) with an interface based on, but somewhat modified from, the standard X-Windows interface released with that version of INQUERY. Figure 1 (in section I of the Interactive System Description) is a screen dump of the interface that we used. Because we were interested explicitly in how previous experience in IR related to the use of the novel functions of relevance feedback and ranking, we restricted query formulation to unstructured input, without any of the operators offered by INQUERY, with the exception of the ability to specify adjacent-word phrases. The general functions offered by this interface are: unstructured query input; the ability to save a query and to recall a saved query (either on its own, or in combination with other queries); the ability to mark (and unmark) a document as relevant, for relevance feedback purposes; the ability to mark (and unmark) a document as saved (separate from marking it relevant); a scrollable display of ten document titles with document IDs which indicate the source of the document and with the rank-order of each document, but not its retrieval status value (only the top 150 documents were actually returned to the user); the ability to call and scroll through the full text of any specified document from the list of retrieved documents; query terms (including terms added by relevance feedback) indicated by highlighting in the display of the text of the retrieved documents; the number of terms (but not the terms themselves) added to a query as the result of relevance feedback indicated in a line below the query formulation window. See Section I of the Interactive System Description for how these features are implemented in the system. Relevance feedback in INQUERY version 2.1p3 allows only positive relevance judgments, and adds five terms to the query if only one document is marked relevant, and two more for each subsequent relevant document. The reweighting and term-selection is done according to the optimum formulae as described in Haines & Croft (1993). The system ran on a dedicated SPARCStation 5 with a seventeen-inch color monitor (see the System Description for the Rutgers Interactive Track Study for details).

2.3 Procedures

An appointment was made with each volunteer searcher to come to the experiment site for a two and one-quarter hour session. Each session consisted of: a pre-search questionnaire and a pre-search interview (together lasting about 15 minutes); a hands-on tutorial for our version of INQUERY (about 40 minutes); a practice search using TREC-4 adhoc topic 224, to familiarize the subjects with INQUERY and with the task which they would be set (15 minutes); two searches on two of the 25 TREC-4 interactive adhoc topics (30 minutes each); a brief search-evaluation questionnaire administered after each search; and, a closing interview (about 15 minutes). The two interviews were tape-recorded, the tutorial, practice search, and searches were completely logged (all actions passed between the interface and the search engine were recorded and time-stamped), the subjects were asked to think-aloud during the three searches, and both their thinking-aloud and their interactions with the interface (i.e. the monitor screen) were recorded on videotape. One or two investigators were present with each subject throughout the entire process, to conduct the interviews, to introduce the tutorial and the search tasks, and to be available in case of system failure or other problem. Explanation of system features was left to the tutorial only. See Appendix A for the questions that were asked in the various questionnaires and interviews, and the Interactive System Description for a summary of the tutorial.

The task that the subjects were set was a slight variation of the standard TREC-4 interactive task specification. Subjects, seated in front of the computer with which they would be interacting, were handed a form (Interactive System Description, section II.2), which asked them to imagine that they were themselves interested in the information problem described there (one of the interactive adhoc topics). On this form, they were told that their task was to find as many good documents as they could on this topic, in up to 30 minutes (15 minutes for the practice search). They were told that they could indicate good documents by saving them explicitly, by constructing a query which they thought would get a lot of good documents at the top of the list, or both methods in combination. The investigator went through this form with the subject, and the search was deemed to have started at the time that the subject received the form. Subjects were warned after 25 minutes of searching, and asked to start to finish up if they were still searching at 30 minutes.

Each subject searched on two of the 25 interactive adhoc topics, which means that there were four separate searches, each by a different searcher, for each topic. To control for possible learning effects, the order of presentation of the topics was varied so that each topic was twice the first one given to a searcher, and twice the second. Topic presentation was also varied so that no two searchers were given the same two topics to search, in either order. Because the interactive adhoc topics were chosen randomly, with respect to generators of the topics, from the full set of adhoc topics, and because we had no prior information about characteristics of these topics such as difficulty, we made no attempt to control the distribution of topics on any such features.

3. Results

3.1 Effectiveness

We submitted three sets of retrieval results for our searchers. The "official primary" result consisted of the documents "saved"[1] by one searcher for each topic, ranked in the order in which they were saved. The "official secondary" result consisted of the top 1000 documents retrieved by the "final query" specified by the same searcher for each topic (three topics had no final queries saved), with the explicitly saved documents at the top of the list (frozen rank). These two results are indicated, respectively as ruint1/q0 and ruint1/q1. The searches which were included in ruint1 were chosen according to the following general rules:

1. choose a search which has a "final" query, or more than 30 "saved" queries;
2. prefer a second search to a first search (on the grounds of learning effect);

[1] Because of the way that we specified the task to our users, we define "saved" as meaning all of the documents which a searcher has explicitly marked as "saved", plus, if this were less than 30 documents, enough documents from the top of the list of those retrieved by any query that the searcher saved as a "final" query to make 30 "saved" documents total. In such combined cases, explicitly saved documents are ranked ahead of those implicitly saved by the final query.

3. if more than one search meets these conditions, choose that with more "saved" queries.

In order to maximize the number of documents judged, we submitted a third set of results (ruint2) which combined, for each topic, all of the documents which were explicitly saved by all of the other three searchers for that topic, plus the top 1000 documents retrieved by any saved "final" query (these lists appropriately merged). Because of the way that these lists of documents were generated, we do not discuss any evaluation based on them.

As a rough means of comparison between interactive and non-interactive searching, we also submitted one set of "baseline" results (ruibsl). These were produced by submitting the entire text of the topic description (edited to remove symbols such as "/" and "()" which cause problems for the INQUERY query parser) as an unstructured query to the standard INQUERY retrieval engine.

	ruibsl	ruint1/q1
Recall/Prec		
0.00	0.5884	0.9107
0.10	0.3555	0.6251
0.20	0.3082	0.4560
0.30	0.2587	0.3269
0.40	0.2292	0.2689
0.50	0.1738	0.2288
0.60	0.1251	0.1776
0.70	0.0800	0.1227
0.80	0.0645	0.0659
0.90	0.0100	0.0282
1.00	0.0000	0.0081
Avg Prec	0.1808	0.2668
Prec@30	0.2733	0.3269
R-Prec	0.2287	0.2668

Table 1. Comparison of performance of baseline non-interactive searching (ruibsl) with the secondary task of saving a final query (ruint1/q1) for one set of interactive searches per topic, top 1000 documents.

The evaluations of the retrieval results for ruint1/q1 and ruibsl, according to the standard TREC evaluation measures, are presented in Table 1. It should be noted here that although average precision over the top 1000 documents is significantly higher for the interactive searches, the difference between precision at 30 documents is rather less, as is that of R-Precision. Table 1 compares the results of only one interactive search for each topic with the one baseline search. In addition, three of the interactive searches in this set had no final query, which leads to some problem with interpretation of the comparison. In Table 2, we compare performance between the interactive and non-interactive systems when only the top 30 or fewer documents retrieved are considered, for *all* interactive searches, not just those submitted as official results (the restriction to the top 30 is because many interactive searches led to 30 or fewer saved documents). The comparison is between the performance for each searcher and the baseline, for 100 datapoints, which allows us to consider the numbers of interactive searches which performed below, at, or better than the baseline non-interactive search.

	Mean Diff	Below Bsl	At Bsl	Above Bsl
Prec.	+0.247*	13	19	68
Recall	-0.013	24	51	25

*Significant at $p \leq .001$

Table 2. Comparison of all interactive searches for secondary task against baseline search (Bsl), all at cutoff of 30 documents. Below, at and above Bsl is the number of interactive searches at that level.

Topic	Ret	Rel	Rel Ret	Prec	Recall	Time
202	44	283	32	0.7273	0.1131	33
203	30	33	5	0.1667	0.1515	22
204	30	397	26	0.8667	0.0655	23
205	30	310	16	0.5333	0.0516	28
206	30	47	10	0.3333	0.2128	28
207	30	74	20	0.6667	0.2703	32
208	30	54	7	0.2333	0.1296	30
209	14	87	11	0.7857	0.1264	32
210	32	57	26	0.8125	0.4561	32
211	17	323	17	1.	0.0526	32
212	30	153	24	0.8	0.1569	30
213	30	21	6	0.2	0.2857	19
214	30	5	4	0.1333	0.8	28
215	30	183	23	0.7667	0.1257	20
216	32	36	19	0.5938	0.5278	34
220	30	24	13	0.4333	0.5417	17
223	20	363	15	0.75	0.0413	32
227	45	347	42	0.9333	0.1210	31
232	30	9	3	0.1	0.3333	34
236	30	43	3	0.1	0.0698	31
238	30	270	23	0.7667	0.0854	33
239	30	123	8	0.2667	0.0650	15
242	30	38	21	0.7	0.5526	30
243	30	69	9	0.3	0.1304	29
250	30	86	15	0.5	0.1744	33
Mean				0.5387	0.2256	28.3
Total	744	3435	398			

Table 3. Performance figures for ruint1/q0, the primary interactive searching task, one searcher per topic.

Because of the nature of the "primary" interactive task, which asks searchers to save some (presumably small) set of good documents, it is inappropriate to evaluate ruint1/q0 according to the TREC 4 standard measures. Table 3 therefore presents precision and recall for the set of documents "saved" by the searcher, which is the "primary" evaluation of this task (together with the time taken to perform the search). Because of the great differences in numbers of relevant documents for the different topics, in Table 3 and all subsequent performance evaluation tables for the primary task, we use *macro-averaged* (mean of the individual ratios for each topic) recall and precision.

Precision and Recall for Explicitly or Implicitly Saved Documents

Topic	Num Rel	Lowest Precision Search 1		Search 2		Search 3		Highest Precision Search 4		Average	
		Prec.	Recall	Prec.	Recall	Prec.	Recall	Prec.	Recall	Prec.	Recall
202	283	0.0067	0.0071	0.7273	0.1137	0.8000	0.0707	0.8667	0.0919	0.6152	0.0709
203	33	0.0000	0.0000	0.0769	0.0303	0.1667	0.1515	0.5000	0.0606	0.1859	0.0606
204	397	0.0000	0.0000	0.2000	0.0025	0.7500	0.0076	0.8667	0.0655	0.4542	**0.0189**
205	310	0.1333	0.0129	0.5333	0.0516	0.5667	0.0548	0.9000	0.0290	0.5333	0.0371
206	47	0.1667	0.1064	0.3333	0.2128	0.5000	0.0851	1.0000	0.0638	0.5000	0.1103
207	74	0.6667	0.1081	0.6667	0.2703	0.7000	0.2838	0.7333	0.2973	0.6917	0.2399
208	54	0.0333	0.0185	0.2333	0.1296	0.2353	0.0741	0.5000	0.0556	0.2505	0.0695
209	87	0.0000	0.0000	0.3125	0.0575	0.4667	0.1609	0.7857	0.1264	0.3912	0.0862
210	57	0.8125	0.4561	0.8571	0.2105	0.9167	0.3860	0.9474	0.3158	0.8834	0.3421
211	323	0.9167	0.0341	1.000	0.0279	1.0000	0.0433	1.0000	0.0526	**0.9792**	0.0395
212	153	0.4286	0.0196	0.7500	0.0196	0.8000	0.1569	1.0000	0.0588	0.7447	0.0637
213	21	0.2000	0.2857	0.2000	0.2857	0.3333	0.0952	0.3846	0.2381	0.2795	0.2262
214	5	0.0333	0.2000	0.1333	0.8000	0.5000	0.6000	1.0000	0.4000	0.4167	**0.5000**
215	183	0.6667	0.1093	0.7000	0.1148	0.7667	0.1257	0.8333	0.1366	0.7417	0.1216
216	36	0.5938	0.5278	0.6333	0.5278	0.6667	0.5556	0.8000	0.2222	0.6735	0.4584
220	24	0.4333	0.5417	0.7143	0.2083	1.0000	0.1250	1.0000	0.1667	0.7869	0.2604
223	363	0.3333	0.0275	0.6667	0.0551	0.7500	0.0413	0.8462	0.0303	0.6491	0.0386
227	347	0.6333	0.0548	0.8333	0.0720	0.9333	0.1210	0.9565	0.0634	0.8391	0.0778
232	9	0.0000	0.0000	0.1000	0.3333	0.1429	0.1111	0.3333	0.1111	0.1441	0.1389
236	43	0.0000	0.0000	0.0000	0.0000	0.1000	0.0698	0.4000	0.0465	**0.1250**	0.0291
238	270	0.4000	0.0148	0.5333	0.0593	0.6667	0.0741	0.7667	0.0852	0.5917	0.0584
239	123	0.0667	0.0163	0.2333	0.0569	0.2667	0.0650	0.3333	0.0813	0.2250	0.0549
242	38	0.2000	0.1579	0.3667	0.2895	0.5667	0.4474	0.7000	0.5526	0.4584	0.3619
243	69	0.0000	0.0000	0.2333	0.1014	0.2667	0.1159	0.3000	0.1304	0.2000	0.0893
250	86	0.2000	0.0698	0.5000	0.1744	0.6667	0.0233	1.0000	0.0116	0.5917	0.0698
Mean	**137.4**	**0.279**	**0.111**	**0.462**	**0.168**	**0.581**	**0.162**	**0.750**	**0.140**	**0.518**	**0.145**
Median	**74**	**0.200**	**0.027**	**0.500**	**0.114**	**0.667**	**0.111**	**0.833**	**0.085**	**0.533**	**0.085**

Table 4. Recall and precision for each of 25 search topics. Given are precision and recall for the set of explicitly saved documents if more than 30 documents were saved by the searcher, or if less than 30 documents were saved, without a final query. If searchers saved only a final query, and did not explicitly save individual documents, the top 30 documents retrieved by the query were used as the saved set (implicitly saved documents). If searchers saved a final query in addition to explicitly saving less than 30 documents, the top-ranked documents retrieved by the query were added to the saved set, resulting in a retrieved set of 30 documents. The four individual searches performed by four different people are sorted in increasing order by precision. The average worst and best precision and recall results are highlighted. All averages are macro-averages.

Table 4 presents the macro-averaged precision and recall for each of the four separate searches for each separate topic, based on the explicitly saved documents for each search plus enough from any saved final query to reach a minimum of 30. It is thus the equivalent to the data presented in Table 3, but for all of our searchers, rather than for one search per topic, as in ruint1/q0. The data in Table 4 are presented, for each topic, in rough order of performance of the searches, as indicated by precision. Thus, in addition to indicating overall performance, the data in Table 4 are indicative of both differences in performance (perhaps of difficulty) between topics, and of the rather large range of performance by the different searchers within any one topic. The overall precision for all searches is not significantly different from the precision for the set of single searches in ruint1/q0, which suggests that our method of selection for that set led to a reasonable sample from the searches as a whole. Although ruint1/q0 had higher recall than the searchers overall, this is due to having selected searchers for ruint1 who had saved final queries.

The data in Table 3 and especially in Table 4 raise interesting questions about how to evaluate performance for this interactive searching task, and perhaps for interactive searching in general. Although there is a steady and regular increase in overall performance, as measured by mean precision, from the groups of least good to best performing searches, there are anomalies resulting from the differences in number of saved documents. For instance, for topic 220 in Table 4, the "worst" search retrieved 13 relevant documents out of 30 saved documents; the "best" search saved only 4 documents, all of which were relevant. Using van Rijsbergen's E (van Rijsbergen, 1979) for evaluation in this case (with no preference between recall and precision) leads to a substantial benefit for the "worst" search (0.5185) over the "best" (0.7143). Although this particular example may only demonstrate that our classification of searches is faulty, it also suggests that the measures that are being used for the TREC 4 "primary" evaluation of this searching task need to be re-examined.

3.2 Relationships between performance and other variables

We were interested in possible relationships between characteristics of the searchers and their performance, and also in relationships between other characteristics of the searches, and performance. Somewhat surprisingly, *none* of the demographic or experience variables obtained from the pre-search interview is significantly related to performance, as measured in Table 4. Also, there is no significant relationship between time taken for a search and performance, nor between the order of search for a topic and performance. The latter would be an indication of learning effect, but it appears that inter-topic differences are so large that any possible effect is swamped by this factor.

A major concern of our ongoing research is to discover if there are any relationships between the searchers' mental models of IR and their performance in the system, either in terms of search effectiveness measures such as recall and precision, or in terms of other measures, or of search behaviors. This is an area we will explore further with the data we have collected in this study. At this point, we have, on the basis of content analysis of our interview data, been able to identify a set of search strategies, which we believe are reflective of such models, and which appear to have had some relationship to the behaviors in which our searchers engaged. Although these are similar to search strategies and tactics that have been identified by, for instance, Bates (1979) and Hewitt & Scott (1987), there are also some differences. These strategies are indicated in Table 5. Many of our searchers indicated that they were able to use their familiar strategies in this unfamiliar system, by adapting them to the new features. For instance, Restriction was approximated by marking many similar documents for relevance feedback. For strategies which could not be used, such as Boolean search, searchers found alternative behaviors.

I. TERM STRATEGIES (TERM in Bates (1979))
   1. Identifying keywords
   2. Identifying synonyms
   3. Identifying controlled vocabulary
   4. Specifying phrases

II. DATABASE STRATEGIES (FILE STRUCTURE in Bates (1979))
   5. Understanding database

III. INTERACTION STRATEGIES
   6. Interaction with thesaurus
   7. Interaction with documents
   8. Magnitude feedback

IV. SEARCH STRATEGY (SEARCH FORMULATION in Bates (1979))
   9. Facet analysis
   10. Broad to narrow
   11. Boolean
   12. Specific search
   13. Restriction
   14. Iterative/interactive searching
   15. Structured query

Table 5. Categories of "usual" searching strategies

3.3 Characteristics of the search process

In addition to the time taken to do a search, which is constrained by the nature of the task that was given to the searchers, other important features of the search process, for our study, include: the use of relevance feedback; the nature of the queries which people construct; how the searchers interact with the documents and their surrogates; and, how their searching behaviors relate to their normal searching practices. Most of these characteristics are still under investigation, and many of them will be obtainable only through analysis of the interviews, and of the thinking-aloud protocols, which is now underway.

Here we discuss aspects of relevance feedback and query construction which are directly obtainable from the search logs, which seem to us to have some interesting implications. For a full description of the search process variables which we have investigated, and the values we found for them, see Section III of the Interactive System Description.

We begin by considering relevance feedback behavior. Only one searcher did not use relevance feedback at least once in at least one search iteration (Iteration is defined as all that takes place between one invocation of the Run Query button and the next, with the first iteration beginning with the searcher receiving the search topic, and the last ending with invoking the Exit button. Iterations are queries plus one). Of all of the queries in which relevance feedback was possible (699 out of a total of 846), relevance feedback was used in 491 (70.2%). The mean number of documents marked relevant per query was 4.9, adding, on average, 12.82 terms per relevance feedback query. There was no relation between the number of the iteration (how far in the search process an iteration was) and the number of documents marked relevant in that iteration. This finding may be an artifact of averaging across searches with different numbers of iterations, and needs further analysis.

As far as query terms are concerned, we considered two classes of such terms; those supplied by the searcher (*userwords)* and those supplied through relevance feedback. The mean number of userwords (which includes words in phrases as separate words) for all searches was 6.66; the mean number of userwords for the 93 correct first searches was 5.23. There was a slight trend toward increasing number of userwords with iteration ($r=.09$ $p\leq.01$), but less than 1% of the variation in query length can be explained by iteration.

Thus, it appears that although our searchers engaged in substantial interaction with the rest of the IR system (9.46 iterations per search, 4.9 documents marked relevant per rf (relevance feedback) query), the nature of this interaction was, by and large not to increase the number of words in the query, but rather to change them. Although we have no measures, at the moment, that could tell us about any increase in search effectiveness through the search, it at least seems likely that the searchers continued to interact in order to improve their performance. It is also the case that the nature of the task that was set the searchers might have led to this form of interaction, since the focus was not on constructing an ever better query, but rather on finding (being able to see) more good documents.

A related interesting result is that there were significantly more userwords in queries that used relevance feedback than in queries that did not use relevance feedback (mean userwords per non-rf query = 6.1; Mean userwords per rf query = 7.22). Although this amounts to only one additional word per query, the difference is statistically significant (Mann-Whitney U' 4.01, $p<.0001$), and may even be considered substantively significant, given the relatively small number of words in the average query. Since all but one of our searchers used rf, this result seems unlikely to be due to general searcher characteristics. A possible explanation for this finding is that the increased number of highlighted terms in documents retrieved by rf searches either drew the searchers' attention to more terms in the texts which could be used for the query, or reminded them of terms which they could add. Again, it may be possible to get a better explanation of this finding from the thinking-aloud protocols.

In our interface, the display resulting from query submission is a list of the titles of the top ten retrieved documents, which is scrollable through the entire list. In order to read the text of a document, the searcher must explicitly request (by double-clicking on the title) the display. The mean number of times that the full text of a document was requested was 23.690 per search, with an Inter Quartile Range of 15-30. These data suggest that there was fairly substantial interaction with the full text of documents, despite relatively little experience with full-text retrieval systems (see Interactive System Description, II.1.i).

3.4 Searcher responses to relevance feedback and ranking

We have some informal (that is, anecdotal) results from the thinking aloud protocols and the post-search interviews concerning how our searchers used and understood relevance feedback, which may have interesting implications for implementation of this feature in interactive IR systems for end users. The comments we make here will need to be buttressed by more detailed and extensive analysis of our data, but as they stand they are at least suggestive of trends.

Many of the searchers commented that they wanted either explicit knowledge of the terms that had been added to their queries by relevance feedback, or, more strongly, that they wanted to have control over which terms, obtained through relevance feedback, would be added to their queries. The validity, or reasonableness of this desire is substantiated by recent results that indicate that even almost completely inexperienced searchers can effectively choose terms for queries offered through relevance feedback (Koenemann, 1995). This is in rather sharp contradiction to the commonly held belief that users in IR systems may not have sufficient knowledge of the workings of the system to make effective choices of this sort.

Another result that might have significant implications for relevance feedback implementation is that many of the searchers commented that they wished that they could indicate documents as not being good. This comment took several forms. Sometimes it was couched as a desire for a "NOT" operator, sometimes it was made explicitly by asking for the ability to mark a document "not relevant", sometimes it was expressed simply as "I wish I didn't have to see the same bad documents all the time". In the context of a system offering relevance feedback, these might all conflate to having the ability to use negative relevance judgments in the feedback process. Although this is commonly done in non-interactive environments, it is not at all common in interactive IR systems, usually on the grounds that "users don't want it".

The other consistent comment by the searchers who used relevance feedback successfully (or rather, thought that they did so), was that using relevance feedback for query expansion or modification was *easier* than doing it oneself. Finding good terms for searching is an arduous process, and relevance feedback seemed to ease this burden substantially, for a substantial number of our searchers, both by supplying terms, and by suggesting them.

We wish also to note the importance of distinguishing between "saved" documents and "relevant" documents, at least in our system, for this task. During the "thinking-aloud", a number of searchers made comments that explicitly separated these functions, for instance, noting that a document was "good", and should be saved, but that it would not be used for relevance feedback, because that would only "get more like it", or because it "didn't have good words in it". Conversely, a document might be marked for relevance feedback, but not saved, because it "has good words in it", but is "not quite on the topic". Such comments, and the general idea of distinguishing between the relevance feedback function and the saving of documents, indicate that searchers with no (or almost no) experience of relevance feedback can rapidly develop sophisticated models of its operation and manipulation.

Our searchers were close to unanimous in their approval of ranked output, although there was also evident, in the thinking-aloud protocols, some confusion between the length of the ranked list (set at a maximum of 150) and an unranked set of size 150. In general, our searchers appear to have made effective use of the ranking mechanism, primarily by working to move good documents to the top of the list (again, according to their comments while thinking-aloud). The positive comments on ranking had usually to do with "getting good stuff at the top", and "not having to look through the whole list". However, seeing documents that had been previously identified as not good continue to appear fairly high in subsequent ranked lists was disturbing to many searchers.

4. Conclusions

Although our results are still preliminary, and also rather incomplete, we feel that it is possible to make some tentative conclusions based on them. The most obvious one, of course, is that it appears that, for this explicit task, support for interactive searching is valuable. Although we have no comparative data with automatic systems on the adhoc task, our (admittedly rather impoverished) baseline search is not an unreasonable approximation of how an automatic system without too many frills would perform, given the sorts of queries that we have faced. And our interactive searchers appear to have done rather better than the baseline in this task.

It is probably also safe to conclude, on the basis of our data to date, that people who have had little or no experience of relevance feedback and ranking can, with relatively little training, learn to use these features quite effectively. Although there are certainly instances in our data of people who had some difficulty in understanding and using both relevance feedback and ranking, it seems that many such problems were attributable to forgetting about the features entirely, or to forgetting just what they did (especially for relevance feedback).

Our findings so far, with respect to these features, have some interesting implications for how such features might be implemented in end-user IR systems. For instance, it seems clear that we should at least try to give searchers more knowledge of what happens in relevance feedback, and probably to give them more control over just what is actually done (the latter suggestion cries for further empirical studies). Furthermore, it seems that some mechanism should be provided for explicitly moving non-relevant documents down in the lists of retrieved documents, if not removing them from the lists entirely. Negative relevance feedback seems at least a reasonable candidate for such a mechanism. And it appears that some method of explicit explanation of the reasons for document rankings will be necessary, in order both to help people interpret the rankings, and to support them in their interactions with the database.

Although others have also found little relationship between individual differences of searchers and search outcomes (e.g. Saracevic & Kantor, 1988), we were nevertheless somewhat surprised that we found no significant relationships in this rather different situation. This finding is still rather tentative, since we have some other characteristics, such as mental models of IR, yet to investigate. But, it, combined with the rather clear differences in performance indicated in Table 4, suggests that we need further to investigate whether features supporting interaction in IR systems can lead to reducing differences in performance between searchers.

This brings us to our final comments, which concern the nature of evaluation of performance in interactive IR systems. It seems to us reasonably clear that the task that has been set the interactive track this year, and the primary method for evaluating that task, may not be very good for evaluating and comparing different interactive IR systems. Precision and recall on the set of saved items has obvious problems, some of which we noted above. Indeed, evaluating on the basis of saved items, in response to someone else's information problem, may have turned out to be an experiment in consistency of relevance judgments between searchers and relevance assessors, rather than an evaluation of system performance. For instance, for topic 243, of the 46 documents explicitly saved by the four searchers, only 11 were judged relevant by the assessors. Furthermore, the task that was set, retrieving as many good documents as possible in some time period, unfortunately does not relate well to many of the information problems represented by the adhoc topics. These problems often suggested that *one* document, were it to answer a specific question, would be far preferable to many documents, each of which, while eminently topically relevant, was completely redundant with the others.

Although issues of this sort have been raised before in IR evaluation, it seems that the interactive context makes them especially important. Indeed, our searchers, when asked in their pre-search interview how they would decide when a search was finished, rarely answered that this would be when they felt that they had found all of the good documents in the database. On the other hand, as Su (1992) has found, users of interactive IR systems seem not to be too worried about precision, either. All of this suggests, to us, that if we are going to be serious about evaluating effectiveness in interactive IR, we need to develop some new kinds of task environments in which to do the evaluation (implying some new methodologies, as well), and some new performance measures. The former seems especially to require that we look at information problem or tasks that are "real" to the searchers whom we are studying; the latter, that we develop measures or descriptions based upon the search process itself, and upon the task which has led the searchers to engage in the IR situation. It is our hope that the experience of this year's interactive track at TREC will provide a basis for such a new evaluation paradigm.

Acknowledgments

Aravindan Veerasamy, from Georgia Tech, spent a summer working with us on this project. We are indebted to him for his participation, including study design, data collection, talking about things, being a good guy, and lots of stellar programming. The Center for Intelligent Information Retrieval at the University of Massachusetts provided us with invaluable support in our use of INQUERY. And we owe our greatest thanks to the wonderful people who volunteered to be the searchers in this study.

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Appendix A. Experimental Materials

RUTGERS TREC 4 INTERACTIVE SEARCHING EXPERIMENT

SEARCHER QUESTIONNAIRE

1. Please indicate below all the college/university degrees you have (or expect):

    ________________ ____
    Degree Major

    ________________ ____
    Degree Major

    ________________ ____
    Degree Major

2. How much experience have you had doing online searching with the following kinds of systems? Please answer by circling a number on the response scale.
    [here we give a five-point scale, from None (1) to A great deal (5) for each of the following kinds of systems]
    Computerized Library Catalogs
    CD ROM Systems, e.g. Infotrac
    Commercial online systems, e.g. Dialog, Lexis, BRS Afterdark
    World Wide Web Browsers, e.g. Mosaic, Netscape
    Other systems, please specify.

3. Overall, how many years have you been doing online searching? ___________ years

4. Do you do online searches for:
    ______ Yourself only
    ______ Others, e.g. as an intermediary
    ______ Yourself and others

5. How much experience have you had searching **full-text** databases? [five-point scale, None to A great deal]

6. How much experience have you had searching in **ranked-output** information retrieval systems? [as above]

7. How much experience have you had searching in information retrieval systems which offer **automatic relevance feedback**? [as above]

8. How often do you use a computer in your workplace, school or home?
    _____Daily _____Once or twice a month _____Never
    _____Once or twice a week _____Less than monthly

9. How much experience have you had using a mouse-based interface? [five point scale from None to A great deal]

10. What is your age?
    _____Under 21 _____21-30 _____31-40 _____41-50 _____51-60 _____over 60

11. Are you: _____Female _____Male

TREC 4 PRE-SEARCH INTERVIEW

In order to understand the different searching experiences of our participants, we would like you to answer a few questions about the methods you typically use when you do online searching. When you answer these questions, please try to give as much detail as you can. You may use the worksheet for any notes you wish to make. (Hand worksheet to searcher)

Imagine that you are interested in finding information on the following topic and that you have available to you a computerized database of newspaper articles which you can search. [This paragraph, and

Topic: Identify alternative sources of energy for automobiles. Include additives to gasoline that either decrease pollution or reduce oil consumption.

[The interviewer reads the topic. The problem description and topic are printed at the top of the worksheet.]

1. How would you go about putting together a search on this topic? What would be your overall approach? Try to describe what you would do first, and then the steps you would go through after that.

2. On the worksheet, please write down what you think your initial search statement, or query, to the system would be. Write the query just as you would enter it into the system you normally search. Do this next to #2 on the worksheet.

3. After you've run the query, what would you do to determine if it had retrieved any good documents?

4. What do you think you would do if your query didn't retrieve any good documents?

5. How would you decide that your search is finished?

RUTGERS TREC 4 INTERACTIVE SEARCHING EXPERIMENT

SEARCH EVALUATION FORM

TOPIC NUMBER__________

1. How familiar are you with this topic? [five points, Not at all (1) Somewhat (3) Very much (5)]

2. How easy was it to do this search? [five points, Not easy (1) Somewhat (3) Very easy (5)]

3. How satisfied are you with your search results? [five points, Not at all (1) Somewhat (3) Completely (5)]

4. Do you feel you had enough time to do an effective search? [five points, Far too little (1) Just enough (3) Too much (5)]

TREC 4 POST-SEARCH INTERVIEW

At the beginning of our session today you talked about your typical online searching methods. Now think about the two searches you just conducted with the RU-INQUERY retrieval system.

1. Would you say that you followed your routine searching methods completely, somewhat or not at all when you did these searches?
   Completely ____ Somewhat ____ Not at all____ (go to Q3)

2. Which of your routine searching methods did you use in these searches?

3. Which methods did you NOT use in these searches? (For each method mentioned, ask:) Why did you not use this method? What did you do instead?

4. Did you use or try to use the Relevance Feedback feature in either of your searches?
   a. Did not try to use RF ____
      Ask: Why not?
   b. Tried RF unsuccessfully ____
      Ask: What happened?
   c. Used RF ____
      Ask: In what ways was this feature helpful or not helpful?

5. In what ways was it helpful or not helpful to have Ranked Output in your searches?

6. In what ways was it helpful or not helpful to have Full Text?

7. Finally, are there any comments that you have on your experience with RU-INQUERY? Features that you liked or didn't like, or features that you wish you'd had?

Interactive System Description for Rutgers TREC-4 Interactive Study (runit1)

I. System description

I.1 Screen dump of a typical screen (Figure 1).

I.2 Usable features of the interface

I.2.a General

Our retrieval engine is INQUERY 2.1p3, distributed by the Center for Intelligent Information Retrieval, University of Massachusetts. We reduced the functionality of the query formulation and interface features for our experiment, while basing the interface and general features on the distributed system. The interface consists, from top to bottom, of: a ine with buttons for query control and manipulation; a query formulation window; an information line; a results summary window; a text reading window; and a keyword finding button.

I.2.b Query formulation features

A query is entered in the **query formulation window** at the top of the screen. Queries are unstructured, with no operators except for the "hyphen", which indicates that the words connected by the hyphen must appear adjacent to one another, in the stipulated order. Common query phrases, such as 'give me information on' are automatically eliminated by the INQUERY query stop-phrase routines. Queries can extend over multiple lines, and the window is scrollable.

Run Query runs the current query in the query formulation window (modified according to any changes due to relevance feedback). If one or more words in the query do not occur in the database, a pop-up window gives this message, and asks the user to check the spelling of the word (displayed) or to remove it from the query. **Save Query** opens a window which allows the current query to be saved to a specific name. **Load Query** opens a window which allows any saved query to be put into the query formulation window (if there is already a query there, the loaded query is inserted at the cursor). **Clear Query** removes the current query from the query formulation window. **Clear Rel Feedback** removes the indication of relevance from all documents so marked, and reverts the query to that in the query formulation window only. **Exit** ends the interaction by closing the interface.

I.2.c. Information features

In the information lines below the query formulation window, information is displayed, from left to right, about the number of documents that have been marked relevant, to be used for relevance feedback; the number of terms that have been added to the query due to relevance feedback (this information is provided as each document is marked); and the number of documents that have been marked to be saved.

I.2.d. Search results

Below the information line is a **"summary" window**, which displays, from left to right: the rank; the document id; and, the title of the document, for ten documents. This list is scrollable, ten document titles at a time.

On the left of each title display is a box which can be clicked on to mark an item as **relevant**, for the purpose of automatic relevance feedback. On the right of each title display is a box which can be clicked on to indicate that an item is to be "**saved**" to a set of saved documents. Both relevant and save boxes are toggles which change from blue to yellow when invoked, and back to blue when cleared.

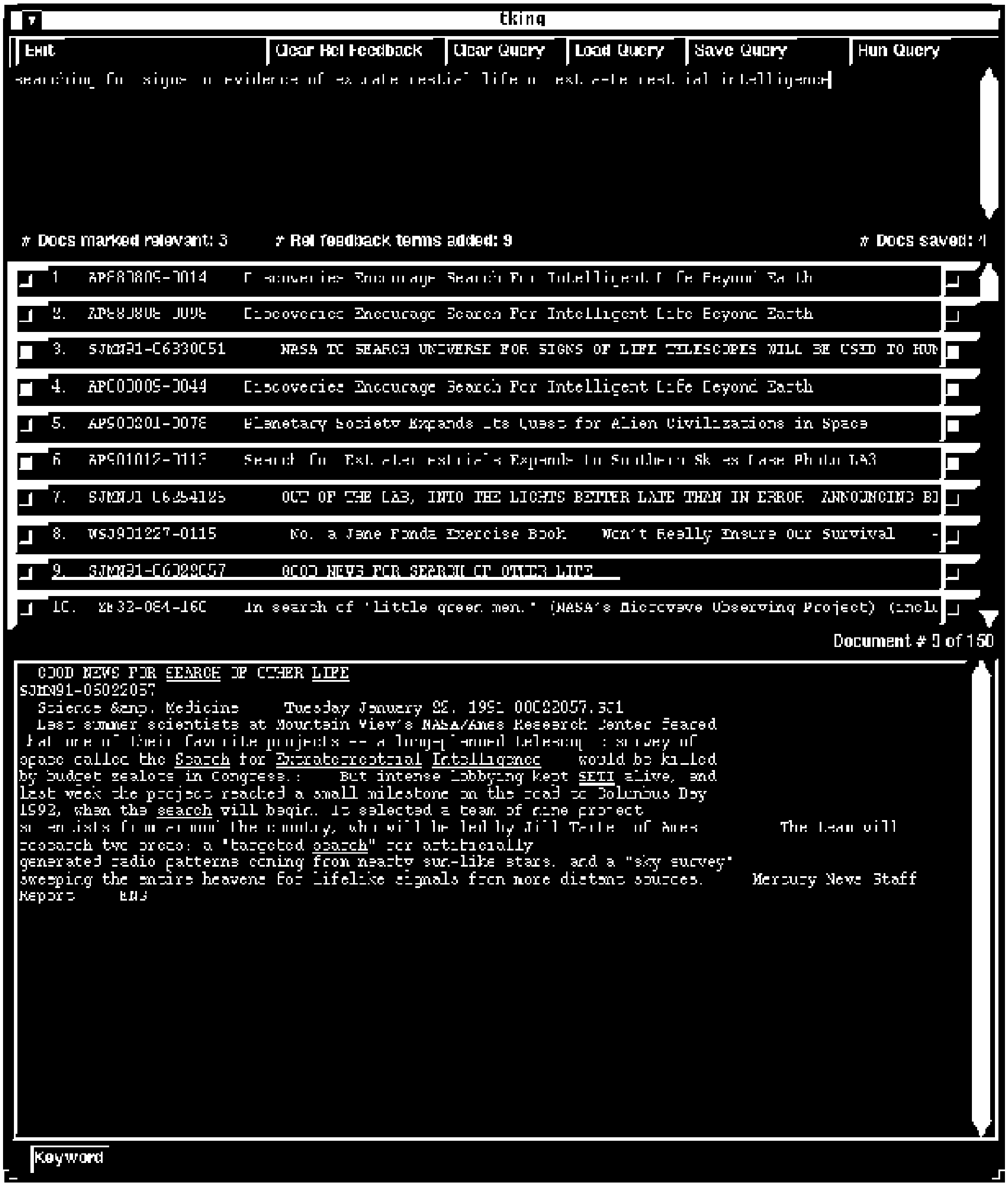

Figure 1. Screen dump of "typical" RU-INQUERY interface.

Double-clicking on a title brings up the text of that document in the **document window** at the bottom of the screen (the document window is empty until a document is explicitly selected for display). The title of the document which is being displayed is underlined in the summary window. The rank of the displayed document is indicated in an information line between the summary window and the document window, with the total number of retrieved documents (set to a default maximum of 150 documents in the retrieved list). The text of the document is scrollable, either by scrollbar on the right, or by clicking on the Keyword button at the lower left of the screen, which scrolls the text display to the next occurrence of any query word. All query words are underlined and highlighted, including those added by relevance feedback.

I.3 Style of Interface

Graphical User Interface (GUI)

II. Experimental Conditions

II.1 Searcher Characteristics

a. **Number of searchers in experiment**: 51 (includes one searcher whose results were not used because of a system failure)

b. **Number of searchers per topic**: 4

c. **Age group of searchers**:

Age	n(searchers)
Under 21	0
21-30	10
31-40	18
41-50	16
51-60	5
Over 60	2

d. **Gender of searchers**

Female: 33 **Male:** 18

e. **Educational level of searchers** (All searchers had at least a Bachelor's degree, many had multiple advanced degrees):

Degree	n(searchers)
M.A.	24
MLS	39
Ph.D. (expected)	9
Ph.D. (earned)	5
JD	3

f. **Purpose of searching**:

For oneself: 20

For oneself & others: 31

g. **Frequency of computer use**:

Once or twice a week: 9

Daily: 42

h. **Experience with mouse-based interface**: (Scale 1-5, where 5 is "A great deal". No searchers reported 1 "None".)

MEAN: 4.402

i. **IR searching experience** (all on 1-5 scales, with 1=None, 3=Some, 5=A great deal)

With Computerized Library Catalogs

Value	n(searchers)
1	0
2	3
3	11
3.5	1
4	20
5	16

MEAN: 3.971

With CD-ROM Systems

Value	n(searchers)
1	2
2	12
3	22
4	10
5	5

MEAN: 3.078

With Commercial Online Systems

Value	n(searchers)
1	4
2	11
3	18
4	11
5	7

MEAN: 3.118

With WWW Browsers

Value	n(searchers)
1	6
2	15
3	11
4	11
5	8

MEAN: 3.0

With Other Systems

Value	n(searchers)
1	40 (36 no response)
2	1
3	5
4	1
5	4

MEAN: 1.588

Years of Searching Experience:

MEAN: 5.517 MEDIAN: 3.500

MIN: 0 MAX: 25 SD: 5.754

With Full-Text Databases

Value	n(searchers)
1	10
2	15
3	17
4	5
5	4

MEAN: 2.569

With Ranked-Output Systems

Value	n(searchers)
1	25
2	14
3	10
4	1
5	1
MEAN: 1.804	

With Relevance Feedback Systems

Value	n(searchers)
1	37 (1 non-response)
2	6
3	6
4	1
5	1
MEAN: 1.490	

II.2 Task description (Below are the verbatim instructions given to the searchers on the search form. Searchers were instructed to "believe that this is a topic that you, yourself, are interested in".)

Your task is to find as many documents as you can which address the information problem given below, but without too much rubbish. You should complete the task in around 30 minutes or less.

[Here, the topic of the search was displayed]

In the RU-INQUERY system, for the purposes of this task, you may find and save documents in two ways. One is to mark the documents you think are good with the ***Save Document*** *buttons; the other is to make a query which ranks a lot of good documents at the top of the list, and to* ***Save*** *this* ***Query****. If you do the latter, please name the query that you save* ***final****. You may, if you want, use both methods in combination.*

Please remember that the database in which you are searching has documents in it which were published between 1988 and 1992, so you will not be able to find documents referring to current events.

When you have completed your task (or when your time is up), and saved all the documents you like, and/or a final query, please click on the ***Exit*** *button at the top left of the RU-INQUERY interface.*

Please remember to ***think aloud*** *while you are doing the search (including while you are reading the description of the information problem).*

Thanks, and have fun!

II.3 Training

II.3.a Description of training process.

After having been interviewed about their normal searching behavior, searchers were seated at the computer on which they would be searching, given a loose-leaf folder with a printed tutorial for the RU-INQUERY system, and were instructed to follow the tutorial completely, by interacting with the system according to the directions in the tutorial. Screen dumps of screens they would encounter during the tutorial were also provided. The entire tutorial was based around a search on the topic of "documents reporting on the possibility of, and search for extra-terrestrial life and/or intelligence", one of the TREC-4 adhoc topics not in the set of interactive topics, and was conducted on the TREC 4 adhoc database.

The tutorial was divided into three sections. Section one was concerned with the mechanics of the interface, with using the features of RU-INQUERY for constructing and submitting queries, and with interpreting the system output. Ranked output was explained in the tutorial as follows:

The RU-INQUERY system ranks all of the documents in the database according to how well it believes each document will satisfy your information problem; that is, the document's relevance. It does this in a very simple way. The rank of a document is based on:

- *how many of the words in your query appear in the document;*
- *how often these words appear in the document;*
- *how common the words that match are in the document collection as a whole (the more common they are, the less important);*
- *the length of the document.*

RU-INQUERY combines all of these factors into a single score that is then used to rank all of the documents, with the document having the highest score being ranked 1. Notice that this means that documents do not have to match your query exactly in order to be retrieved and ranked, as they do in many other information retrieval systems. In general, documents which contain at least one word that is in your query (except for very common words like and, the, of, and so on, on the stop list, which are ignored by the system), will be ranked.

Section two of the tutorial explained the use of the Save Query and Load Query features, and the use of the Relevance Feedback and Save Document buttons. Relevance feedback was explained in the tutorial as follows:

In RU-INQUERY, you can tell the system that a document is relevant, or good. If you do this, the system will automatically modify your original query, the next time you run it, in order to try to find more documents like the one(s) which you marked relevant. It does this modification by adding new terms to the query from documents which you have marked relevant, and by making some terms which appear often in relevant documents more important in the query. This is called relevance feedback.

Relevance feedback typically has three effects: documents which you have marked relevant will be moved higher up the ranking; new documents which are similar to those which you have marked relevant will be added to the list of retrieved documents; and documents which are similar to those you marked relevant and were already in the retrieved list, will be moved higher up the ranking.

In Section two, the interactions between Clear Query, Clear Rel Feedback and Save Query were demonstrated, as was the difference between the Save Document and Relevant Document features.

Section 3 was a practice search, using the same problem description as for the task (see II.2, above), but limited to fifteen minutes (noting that they would have 30 minutes in the real searches). The practice search was on one of the TREC 4 adhoc topics not in the interactive set (224), and was introduced as follows:

For this study, you will be asked to do two searches for documents which will be useful in addressing real information problems. To give you some more experience with using RU-INQUERY, and with the task you will be doing, we would like you to do a practice search of this type.

Imagine that you are interested in the following information problem:

What can be done to lower blood pressure for people diagnosed with high blood pressure? Include benefits and side effects.

Your task is to find as many documents as you can which address this problem, but without too much rubbish. You should complete the task in around 15 minutes or less (in the real searches, you will have up to 30 minutes).

II.3.b Time for training

The training times (in minutes) are for Sections one and two only. All participants used their allotted fifteen minutes for the practice search, which can be added for a total tutorial time.

MEAN: 39.98

MIN: 20 MAX: 65

III. Search Process

1. Clock time (i.e. real, elapsed time) per search, from the time the searcher was given the topic, until the searcher exited the system given in minutes. Note that searchers were instructed that they had 30 minutes in which to do the search.

MEAN: 26.850 MEDIAN: 29

MIN: 11 MAX: 35 SD: 5.842

2. Number of documents "viewed" during a search. We have three categories of "viewing": **all titles**, defined as the total number of document titles displayed during the search; **unique titles**, defined as the number of unique titles displayed during the search; **Text**, defined as the number of documents whose text the user displayed during the search.

Viewing Behavior				
Viewing Type	Mean	Median	SD	Range
All Titles	321.470	300	181.872	50 - 900
Unique Titles	139.780	122.500	82.968	22 - 391
Text	23.690	22.000	11.572	5 - 66

3. Number of iterations per search. An iteration is all that occurs between one invocation of "Run Query" and the next, with the first iteration beginning when the searcher is handed the topic, and the last ending when the searcher "Exits" the system. Note that this number corresponds to the number of queries submitted to the system, plus one (for the last iteration, ending with Exit).

MEAN: 9.46 MEDIAN: 8.5

MIN: 2 MAX: 28 SD: 5.231

4. Query characteristics

a. **Total queries for all searches**: 846

b. **Total correct queries that retrieved documents**: 799

c. **Queries that retrieved no documents**: 5

d. **Queries that contained words not in database, or which were syntactically incorrect**: 42

5. Use of relevance feedback

There were 746 non-first queries total, of which 47 followed queries that retrieved no documents or which had errors, leaving 699 queries for which searchers had the opportunity to use relevance feedback.

a. **Total usage**: 491 queries using relevance feedback (70.2%)

b. **Number of relevant documents per query** (of the 491 queries)

MEAN: 4.9 MEDIAN: 3.0

MIN: 1 MAX: 45 SD: 4.96

c. **Number of terms added by relevance feedback per query**

MEAN: 12.82 MEDIAN: 9

MIN: 5 MAX: 93 SD: 9.9

6. Numbers of terms used in queries

a. **Userwords per query** (meaning words entered by the searcher in the query formulation window, and counting hyphenated terms as the sum of the words in the term)

MEAN: 6.66 MEDIAN: 5

MIN: 1 MAX: 162 SD: 8.6

b. **Total query length** (meaning user words plus words added by relevance feedback)

MEAN: 14.06 MEDIAN: 11

MIN: 1 MAX: 162 SD: 13.75

c. **Total query length for non-feedback queries** (n=330)

MEAN: 5.86 MEDIAN: 4

MIN: 1 MAX: 162 SD: 9.46

d. **Total query length for feedback queries** (n=474)

MEAN: 19.78 MEDIAN: 16

MIN: 6 MAX: 113 SD: 13.38

e. **Number of userwords per feedback query**

MEAN: 7.22 MEDIAN: 5

MIN: 2 MAX: 76 SD: 7.96

7. Use of system features

Apart from use of relevance feedback and viewing of full texts, as discussed above, these data are not yet computed.

IV Transcript for Topic 236 (Searcher 047)

What follows is the log of the interaction for topic 236, searcher 047. Given are the elapsed time, a description of the searcher's actions, system responses, and extracts from the searcher's verbal protocol. The searcher comments, enclosed in quotation marks below, have been abbreviated for this transcript. The full text of viewed documents is reproduced for short documents, for long documents only the approximate amount that fit on the screen and was visible without scrolling is given.

00:00 USER: Start search; reads topic description

01:45 USER: "Current laws of the sea. Do they mean like if you're in a ship or do they mean like how nature operates in the sea? Hmm, that's a good one." (rereads instructions)

03:45 USER: "I think I'm gonna start with laws of the sea and see just what that brings up for me."

04:01 USER: "Something I miss in this database are the descriptor fields. I'm sort of acting in a Boolean fashion. I don't feel like I'm fully taking advantage of what this system offers."

04:01 SYS: Submitted Query:
laws of the sea
and 0 marked documents

04:03 SYS: Result of Query Evaluation: 150 documents retrieved
04:05 SYS: Display of Titles of Retrieved Documents:

NR NS 1. AP881101-0176 U.S. Votes Against Law Of Sea Convention
NR NS 2. AP901113-0077 Monterey Looks for Federal Law to Help Evict Sea Lions
NR NS 3. AP881031-0251 AGENCIES AND RADIO OUT From AP Newsfeatures
NR NS 4. AP900622-0055 Administrative Law Judge Fines Fishermen in Turtle Case
NR NS 5. WSJ900514-0065 LAW ---- By Milo Geyelin
NR NS 6. FR88105-0063
NR NS 7. AP900901-0010 Death Threats Over Marine Mammals
NR NS 8. AP900512-0030 Sea Lions Still Making Pier 39 Their Home LaserPhoto FX1
NR NS 9. AP901220-0027 Kuwaitis Paid PR Firm $5.64 Million In 3 Months Since Invasion 19 Texans Fined For Altering Turtle Excluder Devices President to Consider Oil Import Tax
NR NS 10. FR88616-0064

04:40 USER: "Ok, let's look at number 1."

04:41 USER: Display Full Text of Document ranked 1

04:42 SYS:
U.S. Votes Against Law Of Sea Convention
AP881101-0176
UNITED NATIONS (AP)

The General Assembly on Tuesday voted in favor of the Convention on the Law of the Sea and for the sixth consecutive year the United States cast its ballot against the resolution.

Washington has said the convention would infringe on U.S. rights to exploit seabed resources.

Turkey joined the United States in casting its vote against the resolution that urged all nations to ratify the 1982 convention. Turkey is in a dispute with Greece over exploration rights in the Aegean Sea.

The resolution was approved by a vote of 135-2 with six abstentions. The rest were absent.

Sixty nations in the 159-member assembly must ratify the convention before it would become international law. So far 35 countries have signed the pact.

It would establish an agency to govern uses of the sea in international waters, traditionally an unrestricted area.

The agency would deal with commercial disputes, protectio

[remaining text deleted...]

05:17 USER: "Great. I'm gonna mark this document as relevant, and rerun my query."

05:18 USER: Mark as Relevant document ranked 1 with document ID AP881101-0176
05:23 SYS: Submitted Query:
laws of the sea
and 1 marked documents
05:26 SYS: Result of Query Evaluation: 150 documents retrieved
05:28 SYS: Display of Titles of Retrieved Documents:

R NS 1. AP881101-0176 U.S. Votes Against Law Of Sea Convention

NR NS 2. AP900201-0221   Dead Sea Was an Active Trade Route as Far Back as 2,300 Years
NR NS 3. FR881027-0027
NR NS 4. AP900724-0203   Part III: The Catastrophe A Great Sea Is Dying; `Hundreds Will Die With It' LaserPhoto NY307 of July 24; Graphics
NR NS 5. SJMN91-06324011   SOVIET LAKE'S DEATH MIRRORED IN CALIFORNIA
NR NS 6. AP880707-0139   Safety Questions Over North Sea Oil Rig
NR NS 7. FR881024-0194
NR NS 8. AP880405-0032   Oil Men Tend Garden On North Sea Oil Rig
NR NS 9. AP880711-0049   Three More Bodies Found In North Sea Platform Disaster With PM-Oil City, Bjt
NR NS 10. PT3-05154561   Automated all-weather cargo transfer system

06:03 USER: "Well, my number one document is still number one."
06:05 USER: Display Full Text of Document ranked 2
06:06 SYS:
Dead Sea Was an Active Trade Route as Far Back as 2,300 Years
AP900201-0221
QUMRAN, Occupied West Bank (AP)
By NICOLAS B. TATRO Associated Press Writer
Researchers say the Dead Sea was a lively commercial center as far back as 2,300 years ago, not anywhere near like it is today with few boats and only sparse settlement along the shores.

The research may also throw new light on the Essenes who lived in the area, casting doubt on the accepted theory that they were isolated hermits.

Arieh Nissenbaum, a geo-chemist, said three stone anchors and mooring ropes found recently in the Dead Sea were the ``first datable evidence'' to support the theory that the Dead Sea was an active place for commerce in the 4th century B.C.

He said Carbon 14 testing at the Weizmann Institute of Science in Rehovot on well-preserved fiber rope fragments left open the possibilty that the anchors were from ships sunk in the first Middle East oil war.

``The Dead Sea was not so dead. This is a m

[remaining text deleted...]

06:16 USER: Scroll Full Text of Document, lines 27 ff now visible
06:19 USER: Scroll Full Text of Document, lines 54 ff now visible

06:24 USER: "It doesn't look good. Bad document for my number two ranked document. Let's look at number three."
06:26 USER: Display Full Text of Document ranked 3

06:29 SYS:

FR881027-0027

Federal Register / Vol. 53, No. 208 / Thursday, October 27, 1988
/ Proposed Rules
DEPARTMENT OF TRANSPORTATION Coast Guard 33 CFR Parts 151, 155 and 158 46 CFR Part 25 [CGD 88-002] RIN 2115-AC89 Regulations Implementing the Pollution Prevention Requirements of
Annex V of MARPOL 73/78 AGENCY: Coast Guard, DOT.
ACTION: Notice of proposed rulemaking.
SUMMARY: The Coast Guard proposes rules to implement the requirements of the ``Act to Prevent Pollution from Ships,'' as recently amended by Congress. These rules will implement Annex V of the International Convention for the Prevention of Pollution by Ships, 1973 entitled ``Regulations for the Prevention of Pollution by Garbage by Ships.'' These regulations would apply to marine craft of any size or type, including commercially operated ships and fishing vessels, uninspected vessels, recreational boats, oil rigs and platforms. These proposed rules also specify that ports and terminals, including recreational boat

[remaining text deleted...]
06:37 USER: "Hm, Federal Register. I'm really not sure what's in this database."
06:39 USER: Scroll Full Text of Document, lines 26 ff now visible
06:47 USER: Scroll Full Text of Document, lines 53 ff now visible
06:53 USER: Scroll Full Text of Document, lines 78 ff now visible

06:54 USER: "I'm not seeing terms highlighted here. Oh, the keyword button. Take me to the next keyword."
06:56 USER: Scroll Full Text of Document to next matched keyword (14 times)

07:26 USER: "I just thought of something. Law of sea convention. What about if I use hyphens to say look for it in this order. There's no descriptors in here. I'll try it."
07:50 USER: Clear All Relevance Markings
07:56 USER: Run Query
07:56 SYS: Submitted Query:
law-of-sea
and 1 marked documents
07:57 SYS: Result of Query Evaluation: 1 documents retrieved
07:57 SYS: Display of Titles of Retrieved Documents:

NR NS 1. AP881101-0176   U.S. Votes Against Law Of Sea Convention

07:59 USER: "Hm, there's one article."
07:59 USER: Rereads topic description.

08:10 USER: "We know that the number one ranked document is relevant. I'm rerunning my original query formulation with that document marked relevant, and I will look at these subsequent records."
08:37 USER: Mark as Relevant document ranked 1 with document ID AP881101-0176
08:40 USER: Run Query
08:41 SYS: Submitted Query:
laws of the sea
and 2 marked documents
08:43 SYS: Result of Query Evaluation: 150 documents retrieved
08:44 SYS: Display of Titles of Retrieved Documents:

R NS 1. AP881101-0176   U.S. Votes Against Law Of Sea Convention
NR NS 2. AP900201-0221   Dead Sea Was an Active Trade Route as Far Back as 2,300 Years
NR NS 3. FR881027-0027
NR NS 4. AP900724-0203   Part III: The Catastrophe A Great Sea Is Dying; `Hundreds Will Die With It' LaserPhoto NY307 of July 24; Graphics
SOVNEWSO3, SOVNEWSOL
NR NS 5. SJMN91-06324011   SOVIET LAKE'S DEATH MIRRORED IN CALIFORNIA
NR NS 6. AP880707-0139   Safety Questions Over North Sea Oil Rig
NR NS 7. FR881024-0194
NR NS 8. AP880405-0032   Oil Men Tend Garden On North Sea Oil Rig
NR NS 9. AP880711-0049   Three More Bodies Found In North Sea Platform Disaster With PM-Oil City, Bjt
NR NS 10. PT3-05154561   Automated all-weather cargo transfer system

08:52 USER: Display Full Text of Document ranked 2

08:52 SYS:

Dead Sea Was an Active Trade Route as Far Back as 2,300 Years

AP900201-0221
QUMRAN, Occupied West Bank (AP)
By NICOLAS B. TATRO Associated Press Writer

Researchers say the Dead Sea was a lively commercial center as far back as 2,300 years ago, not anywhere near like it is today with few boats and only sparse settlement along the shores.

The research may also throw new light on the Essenes who lived in the area, casting doubt on the accepted theory that they were isolated hermits.

Arieh Nissenbaum, a geo-chemist, said three stone anchors and mooring ropes found recently in the Dead Sea were the ``first datable evidence'' to support the theory that the Dead Sea was an active place for commerce in the 4th century B.C.

He said Carbon 14 testing at the Weizmann Institute of Science in Rehovot on well-preserved fiber rope fragments left open the possibilty that the anchors were from ships sunk in the first Middle East oil war.

``The Dead Sea was not so dead. This is a m

[remaining text deleted...]

08:57 USER: "Ok, this dead sea thing in the number two position is no good."
09:00 USER: Display Full Text of Document ranked 3

09:02 SYS:

FR881027-0027

Federal Register / Vol. 53, No. 208 / Thursday, October 27, 1988 / Proposed Rules

DEPARTMENT OF TRANSPORTATION Coast Guard 33 CFR Parts 151, 155 and 158 46 CFR Part 25 [CGD 88-002] RIN 2115-AC89 Regulations Implementing the Pollution Prevention Requirements of Annex V of MARPOL 73/78 AGENCY: Coast Guard, DOT.

ACTION: Notice of proposed rulemaking.

SUMMARY: The Coast Guard proposes rules to implement the requirements of the ``Act to Prevent Pollution from Ships,'' as recently amended by Congress. These rules will implement Annex V of the International Convention for the Prevention of Pollution by Ships, 1973 entitled ``Regulations for the Prevention of Pollution by Garbage by Ships.'' These regulations would apply to marine craft of any size or type, including commercially operated ships and fishing vessels, uninspected vessels, recreational boats, oil rigs and platforms. These proposed rules also specify that ports and terminals, including recreational boat

[remaining text deleted...]

09:17 USER: "Yes. Anything to get sommething going here."
09:18 USER: Mark as Relevant document ranked 3 with document ID FR881027-0027
09:20 USER: Display Full Text of Document ranked 4

09:21 SYS:

Part III: The Catastrophe A Great Sea Is Dying; `Hundreds Will Die With It' LaserPhoto NY307 of July 24; Graphics SOVNEWSO3, SOVNEWSOL

AP900724-0203
BUKHARA, U.S.S.R. (AP)

A tragedy vast in scope is unfolding on the arid plains of Central Asia, a region already unsettled by stirrings of dissent and nationalism. This is the third article in a four-part series based on an AP special correspondent's journey through the Soviet south.

By MORT ROSENBLUM AP Special Correspondent

Beyond Bukhara's irrigated deserts, the noble Amu Darya river dwindles down to a pathetic, poisonous trickle, a victim in one of the world's worst ecological disasters.

Deprived of the Amu Darya and its sister stream, the Syr Darya, the Aral Sea is dying. Within 30 years, what was the world's fourth largest inland sea is expected to be only a dry bed of deadly salt.

Scientists say the sea's condition reflects a far greater crisis across much of Central Asia, caused by years of Soviet insistence on

[remaining text deleted...]

09:49 USER: Scroll Full Text of Document to next matched keyword (10 times)

09:57 USER: "I don't like it. It's all about sea."
09:59 USER: Display Full Text of Document ranked 5

10:00 SYS:

SOVIET LAKE'S DEATH MIRRORED IN CALIFORNIA

SJMN91-06324011

California News Tuesday, November 19, 1991 00324011,SJ1

Photo, Map; PHOTO: Aral Sea Information Committee; VISIT TO NEVADA -- Bill Davoren, left, and Yusup Kamalov visit Pyramid Lake in Nevada. Kamalov is visiting the United States to study ways to revive his homeland, the Aral Sea region of the Soviet Union.; MAP: Mercury News; (Soviet Union, showing Aral Sea) For a group of Bay Area activists, the death of the Aral Sea in Soviet Central Asia has unrolled like a nightmarish, speeded-up version of California history.; "What we took 150 years to destroy, they took only 30 years to do," said Bill Davoren, Tiburon environmentalist and recent co-founder of a U.S.-Soviet group dedicated to restoring what was once the fourth-largest inland sea in the world. Massive cotton irrigation projects have completely siphoned off river flows, shrinking a sea famous as a teeming fishing center to a quarter of its

[remaining text deleted...]

10:06 USER: Scroll Full Text of Document to next matched keyword (12 times)

10:15 USER: "This is all about sea, sea, sea. No good."
10:17 USER: Display Full Text of Document ranked 6

10:18 SYS:

Safety Questions Over North Sea Oil Rig

AP880707-0139
ABERDEEN, Scotland (AP)
By BEN DOBBIN Associated Press Writer

Roy Carey, a survivor of the world's worst offshore oil platform disaster, said Thursday: ``We had all that water around us and no way to get it to us. We had sprinklers but they weren't strong enough.''

Carey's remark as he lay badly burned in a hospital bed in Aberdeen Royal Infirmary pointed up a bitter irony of offshore oil-drilling, one of the world's most dangerous occupations.

The presumed death toll from the explosion and fire Wednesday night on the Piper Alpha platform in the North Sea exceeded 160.

Urgent questions about safety in the offshore oil and gas industry are being raised by the disaster, which brings to more than 300 the number of people who have died in the British sector of the North Sea since gas was first pumped ashore in 1967.

Drilling accidents killed 76 and a helicopter crash killed 45. Last year, six workers were killed an

[remaining text deleted...]

10:34 USER: "I'm using the keyword button here."
10:35 USER: Scroll Full Text of Document to next matched keyword (6 times)

10:39 USER: "Very frustrating."
10:41 USER: Display Full Text of Document ranked 7

10:45 SYS:

FR881024-0194

Federal Register / Vol. 53, No. 205 / Monday, October 24, 1988
/ Unified Agenda Federal Register / Vol. 53, No. 205 / Monday, October 24, 1988
/ Unified Agenda SUBJECT INDEX TO THE UNIFIED AGENDA OF FEDERAL REGULATIONS Sequence Number Sequence Number Sequence Number Sequence Number A
Accountants, peer review 3982
Accrual basis 780
Airline uniform system 2068
Automated clearing house 2116
Bills of lading 3088
Bonds 2118, 2120
Colleges and universities 607, 3169
Cost principles 3166
Emission standards 2957
Job training audit 1424
Loans 3727
Motor carriers 3823
Rail costing system 3814
Reclamation actions 2117
State and local governments 417, 454, 3166
Treasury checks 2117
Airline tickets 1561
American viticultural areas 2132
Athletes and athletic events 2124
Distilled spirits 2123, 2124, 2140
Food store practices 3805

[remaining text deleted...]

10:58 USER: Scroll Full Text of Document to next matched keyword (3 times)

11:00 USER: "Deep sea bed mining program. That's interesting."
11:00 USER: Scroll Full Text of Document to next matched keyword (36 times)

11:29 USER: "Hm, bunches of fish. If I put this in I might get things with oceans and otters and scallops. Actually, it might be kind of interesting. I'm gonna try it."
11:28 USER: Scroll Full Text of Document to next matched keyword
11:31 USER: Mark as Relevant document ranked 7 with document ID FR881024-0194
11:32 USER: Display Full Text of Document ranked 8

11:33 SYS:

Oil Men Tend Garden On North Sea Oil Rig

AP880405-0032
LONDON (AP)

Britons are such avid gardeners they even find time for the hobby on an oil rig in the storm-tossed North Sea.

Workers on the U.S.-owned Chevron Petroleum platform are growing melons, oranges, herbs, vegetables and decorative pot plants in a greenhouse, 100 miles off the Shetland Islands northeast of Scotland.

The 10-foot by 8-foot glass and aluminium greenhouse is bolted to the deck and heated by electricity from the rig's turbine-generators which run on natural gas pumped up from the seabed.

Pests which bother land-based gardeners are unknown at sea in the northern latitude, reported London's Daily Mail newspaper Tuesday, beside a picture of the little greenhouse above the waves in the Ninian oilfield.

The greenhouse cost $750, half from the rig's 18-member garden club and half from the company.

[remaining text deleted...]

11:35 USER: "Gardeners, no."
11:36 USER: Display Full Text of Document ranked 9

11:36 SYS:

Three More Bodies Found In North Sea Platform Disaster With PM-Oil City, Bjt

AP880711-0049
ABERDEEN, Scotland (AP)

The Piper Alpha oil and gas platform was still burning and smoking early today, five days after explosions and fire on the North Sea rig killed 166 men in the world's worst oilfield disaster.

The semi-submersible support rig, Tharos, found three more bodies by early today, bringing the total recovered to 20.

Texas oilfield fire and blowout specialist Red Adair, 73, and his team waited on the rig to board the tilting, ruined platform. Adair's team said they had planned to return to the platform today to continue clearing debris before trying to cap a blazing wellhead.

But a spokeswoman for the platform's operators, Occidental Petroleum Corp., said Adair's plans were put on hold by 35 mph winds and forecasts of possible lightning and thunderstorms.

Adair said three or four of the platform's 36 wellheads were still burning, two of them sending up flames

[remaining text deleted...]

11:40 USER: "That's not gonna help me."
11:41 USER: Display Full Text of Document ranked 10

11:43 SYS:

Automated all-weather cargo transfer system

PT3-05154561
Lee; Donald E. 2033 Parkview Ave. Abington PA 19001
An advanced automated vessel cargo transfer system for loading and unloading of ships and lighters. It includes an articulated manipulator arm mounted on a frame. The arm is provided with a spreader bar at the distal end thereof. The spreader bar is provided with facilities for grasping cargo. Sensors track the movement of the vessel, and automatically responsive controllers adjust the motion and position of the spreader bar to follow the motion of the vessel. Berthing modules are provided to aid in controlling the motion of the vessel. In a major embodiment, the manipulator arm is mounted on a transverse frame that bridges spaced-apart floating barges, and provisions are made for serving vessels both on the outboard and inboard sides of the barges. In another embodiment, the manipulator a

[remaining text deleted...]

11:48 USER: Scroll Full Text of Document to next matched keyword

11:48 USER: "I think I'm gonna have to put ocean here."
11:48 USER: Scroll Full Text of Document to next matched keyword (19 times)

12:00 USER: "That was number 10. I'm gonna rerun this query and then I'm gonna try ocean."
12:05 USER: Run Query

12:05 USER: "My time is still fine."
12:05 SYS: Submitted Query:
laws of the sea
and 4 marked documents

12:15 USER: "It's slow. Either it's a strange query or something's happening. Hm. Ah, there we go."
13:10 SYS: Result of Query Evaluation: 150 documents retrieved
13:14 SYS: Display of Titles of Retrieved Documents:

R NS 1. FR881027-0027
R NS 2. AP881101-0176 U.S. Votes Against Law Of Sea Convention
NR NS 3. AP900201-0221 Dead Sea Was an Active Trade Route as Far Back as 2,300 Years
NR NS 4. AP900724-0203 Part III: The Catastrophe A Great Sea Is Dying; `Hundreds Will Die With It' LaserPhoto NY307 of July 24; Graphics SOVNEWSO3, SOVNEWSOL
NR NS 5. SJMN91-06324011 SOVIET LAKE'S DEATH MIRRORED IN CALIFORNIA
R NS 6. FR881024-0194
NR NS 7. AP901113-0077 Monterey Looks for Federal Law to Help Evict Sea Lions
NR NS 8. AP881031-0251 AGENCIES AND RADIO OUT From AP Newsfeatures
NR NS 9. FR88105-0063
NR NS 10. AP900901-0010 Death Threats Over Marine Mammals

13:37 USER: "Ok, this is not working. I will look at 7,8,9 and 10, and then I'm putting oceans in here and I'll try again."

13:39 USER: Display Full Text of Document ranked 7

13:41 SYS:

Monterey Looks for Federal Law to Help Evict Sea Lions

AP901113-0077
MONTEREY, Calif. (AP)

The Monterey harbor has become a sort of Sea Lion Motel where the sardines are plenty and the living is easy. But the pinnipeds may soon face eviction as officials renew their fight to roust the mammals.

City officials hope to drive away the mammals by enforcing a proposed amendment to a 1972 federal law that protects sea lions from harm. The change, which could go into effect early next year, would make it illegal to feed marine mammals, putting an end to concessionaires selling sea lion snacks that tourists have used to lure the animals to shore.

``To the average Joe, the sea lions look like something out of a Walt Disney movie, but until you go down to the docks and stand right next to one of these monsters, it's hard to understand what the city is dealing with,'' said Mitch Whippern, administrative assistant for the Monterey Public Facilities Department.

Most of the hundred

[remaining text deleted...]

13:49 USER: Scroll Full Text of Document to next matched keyword (4 times)

13:53 USER: "That looks interesting."
13:55 USER: Scroll Full Text of Document to next matched keyword (9 times)

14:02 USER: "The system should help me here. I should be able to put in the documents I find relevant and it should be easy."
14:04 USER: Mark as Relevant document ranked 7 with document ID AP901113-0077
14:06 USER: Display Full Text of Document ranked 8

14:07 SYS:

AGENCIES AND RADIO OUT From AP Newsfeatures

AP881031-0251
SEATTLE (AP)

EDITOR'S NOTE _ Growing herds of California sea lions that converge on Puget Sound each fall are becoming a nuisance, raiding the fisheries and getting in the way of divers. It's a Catch 22 for environmentalists that the law intended to protect endangered marine mammals also has produced a threat to some endangered fish.
By KATIA BLACKBURN Associated Press Writer

Fishermen, divers and coastal residents on Puget Sound are being frustrated by large herds of sea lions and harbor seals feasting on bottom fish, salmon and endangered steelhead

trout headed upstream to spawn.
The federal law that protects endangered whales and other marine mammals prohibits killing the sea lions which kill and eat more than half of the steelhead run each year.
Up to 2,000 sea lions converge on Puget Sound each fall and their numbers are on the rise, wildlife experts say.
In addition to their threat to the fisher

[remaining text deleted...]

14:13 USER: "I am not doing good work on this."
14:15 USER: Mark as Relevant document ranked 8 with document ID AP881031-0251
14:19 USER: Display Full Text of Document ranked 9

14:19 SYS:

FR88105-0063

[Docket No. 87-29] Hemisphere Navigation Co., Inc. v. Sea-Land Service, Inc.; Filing of Complaint and Assignment

Notice is given that a complaint filed by Hemisphere Navigation Co., Inc. (``Hemisphere'') against Sea-Land Service, Inc. (``Sea-Land'') was served December 29, 1987. Hemisphere alleges that Sea-Land has violated various sections of the Intercoastal Shipping Act of 1933, 46 U.S.C. app. 843, the Shipping Act, 1916, 46 U.S.C. app. 801, and the Shipping Act of 1984, 46 U.S.C. app. 1701, by wrongfully charging and demanding, collecting and receiving ocean freight and terminal charges in excess of what was properly applicable pursuant to Sea-Land's Tariff FMC-F-No. 61, in effect between San Juan, Puerto Rico and U.S. Atlantic and Gulf ports.

This proceeding has been assigned to Administrative Law Judge Charles E. Morgan (``Presiding Officer''). Hearing in this matter, if any is held, shall commence within the time limitations prescribed in 46 CFR 502.61.
Th
[remaining text deleted...]

14:32 USER: "Here's number 9. I've marked 7 and 8 relevant."
14:33 USER: Mark as Relevant document ranked 9 with document ID FR88105-0063
14:35 USER: Display Full Text of Document ranked 10

14:36 SYS:
Death Threats Over Marine Mammals
AP900901-0010
BANDON, Ore. (AP)
By JEFF BARNARD Associated Press Writer
The idea of a floating hospital for injured seals and sea lions seemed like a good one to Dan Deuel and Mary Crumley. But it smacked of harboring the enemy to some people, who have made death threats against the couple.
``Man is pretty possessive,'' said Neal Langbehn, a National Marine Fisheries Service special agent, whose job includes tracking down people who shoot marine mammals. ``If a critter causes him any problems, all his natural instinct seems to be to get rid of the critter. As man takes up more and more of the Earth, there are going to be more conflicts.''
Deuel and Crumley and some volunteers run Free Flight Bird and Marine Mammal Rehabilitation Ltd. from their home on a bluff overlooking the Pacific Ocean.
Earlier this year, Deuel suggested to the Bandon Port Commission that he could move his operation to a barge in the harbor. That would make it mo

[remaining text deleted...]

14:40 USER: Scroll Full Text of Document to next matched keyword (2 times)
14:44 USER: Mark as Relevant document ranked 10 with document ID AP900901-0010

14:45 USER: "I'll run this. But I'm gonna get something about federal laws about sea lions."
14:46 USER: Run Query
14:46 SYS: Submitted Query:
laws of the sea
and 8 marked documents

15:15 USER: "It's running my query. Taking its time. Very annoying."
15:36 SYS: Result of Query Evaluation: 150 documents retrieved

15:37 USER: "Well, it added some terms, it added 17 terms. I have a bad feeling I'm gonna get a lot of stuff about marine animals and sea mammals."
15:40 SYS: Display of Titles of Retrieved Documents:

R NS 1. FR881027-0027
R NS 2. AP881031-0251 AGENCIES AND RADIO OUT From AP Newsfeatures
R NS 3. FR881024-0194
R NS 4. AP901113-0077 Monterey Looks for Federal Law to Help Evict Sea Lions
R NS 5. AP900901-0010 Death Threats Over Marine Mammals
NR NS 6. AP880730-0024 No Syringes, But Western Swimmers Do Contend with Sharks, Sewage Spills With AM-Sea Scare, Bjt
NR NS 7. SJMN91-06011130 DEEP-SEA TEST OF WASTE DUMPING PROPOSED SCIENTISTS SAY OCEANS COULD SPARE LAND, AIR
NR NS 8. AP881103-0224 Italy Making a Start on Saving Seas Around It
NR NS 9. AP901112-0005 Cruise Lines Trying to be Eco-Friendly with Garbage
NR NS 10. AP880801-0020 Gumshoes On Garbage Zero In On Beach-Defiling Wastes LaserPhoto NY5

16:00 USER:" Actually, this is starting to look interesting. I'm adding ocean in here and running the query again to see what that does."
16:10 USER: Run Query
16:10 SYS: Submitted Query:
laws of the sea ocean
and 8 marked documents
16:20 USER: Rereads topic description and instructions.

16:21 USER: "You can't talk to anyone, you have no idea of what they mean, it's hard for me being in a situation like this where you can't talk to a person and say is this relevant to you. A person who was interested in this question could use this database better than me."
17:00 SYS: Result of Query Evaluation: 150 documents retrieved
17:04 SYS: Display of Titles of Retrieved Documents:

R NS 1. FR881027-0027
R NS 2. AP881031-0251 AGENCIES AND RADIO OUT From AP Newsfeatures
R NS 3. FR881024-0194
R NS 4. AP900901-0010 Death Threats Over Marine Mammals
NR NS 5. SJMN91-06011130 DEEP-SEA TEST OF WASTE DUMPING PROPOSED SCIENTISTS SAY OCEANS COULD SPARE LAND, AIR

R NS 6. AP901113-0077 Monterey Looks for Federal Law to Help Evict Sea Lions
NR NS 7. AP880730-0024 No Syringes, But Western Swimmers Do Contend with Sharks, Sewage Spills With AM-Sea Scare, Bjt
NR NS 8. AP901112-0005 Cruise Lines Trying to be Eco-Friendly with Garbage
NR NS 9. AP880801-0020 Gumshoes On Garbage Zero In On Beach-Defiling Wastes LaserPhoto NY5
NR NS 10. FR88616-0064

17:20 USER: "My top five documents are still in the top six."
17:21 USER: Reads titles. "This is too environmental. Let me look at what I got."
17:22 USER: Display Full Text of Document ranked 1

17:30 SYS:

FR881027-0027

Federal Register / Vol. 53, No. 208 / Thursday, October 27, 1988
/ Proposed Rules
DEPARTMENT OF TRANSPORTATION Coast Guard 33 CFR Parts 151, 155 and 158 46 CFR Part 25 [CGD 88-002] RIN 2115-AC89 Regulations Implementing the Pollution Prevention Requirements of
Annex V of MARPOL 73/78 AGENCY: Coast Guard, DOT.
ACTION: Notice of proposed rulemaking.
SUMMARY: The Coast Guard proposes rules to implement the requirements of the ``Act to Prevent Pollution from Ships,'' as recently amended by Congress. These rules will implement Annex V of the International Convention for the Prevention of Pollution by Ships, 1973 entitled ``Regulations for the Prevention of Pollution by Garbage by Ships.'' These regulations would apply to marine craft of any size or type, including commercially operated ships and fishing vessels, uninspected vessels, recreational boats, oil rigs and platforms. These proposed rules also specify that ports and terminals, including recreational boat

[remaining text deleted...]

17:53 USER: "I could try regulation, too."
17:54 USER: Scroll List of Titles of Retrieved Documents
17:58 SYS: Display of Titles of Retrieved Documents:

NR NS 11. FR88518-0026
NR NS 12. FR88506-0038
NR NS 13. FR88927-0030
NR NS 14. AP881103-0224 Italy Making a Start on Saving Seas Around It
NR NS 15. SJMN91-06015044 WILSON'S BACKING ON REFUGE SOUGHT
NR NS 16. AP900203-0031 Washington State Wants to Kill Troublesome Sea Lions
NR NS 17. AP880824-0210 Seal Deaths An Early Warning For Humans, Scientists Say
NR NS 18. WSJ910213-0077 A Fragile Ecosystem Off Bahrain Faces Ravages of Oil Slick --- It Abounds With Marine Life That Fishermen Rely On; The Shy Dugong's Peril ---- By Ken Wells Staff Reporter of The Wall Street Journal
NR NS 19. AP880518-0300 Illegal Foreign Fishing in Bering Sea Strains Coast Guard Patrols An AP Extra
NR NS 20. AP880511-0024 Fisheries, Environmentalists Agree On Truce Over Coastal Fishing

17:58 USER: Scroll List of Titles of Retrieved Documents
18:01 SYS: Display of Titles of Retrieved Documents:

NR NS 21. AP880629-0098 In Great lakes, Too, Plastic Junk Claims Victims
NR NS 22. AP880623-0239 In Great lakes, Too, Plastic Junk Claims Victims
NR NS 23. AP900616-0073 Texas Beaches Are Important for Wildlife
NR NS 24. SJMN91-06205161 6 DRUG SUSPECTS BURNED SHIP, JUMPED IN SEA
NR NS 25. FR88504-0025
NR NS 26. FR88121-0023
NR NS 27. AP900319-0109 Sewage Dumped at Sea Poses Health Risks to Swimmers, Seafood Lovers
NR NS 28. SJMN91-06193189 DEVICE MAY BLOW WHISTLE ON MONTEREY'S SEA LIONS
NR NS 29. AP880725-0215 AGENCIES AND RADIO OUT From AP Newsfeatures
NR NS 30. AP880812-0015 Congress Moves On Medical Waste Issue Before Returning Home For Recess

17:45 USER: " Garbage. I lost my whole law of the sea train. This is all about garbage. No good. Garbage and sea lions. I could fail at this. This is really bad."
18:10 USER: Scroll List of Titles of Retrieved Documents
18:13 SYS: Display of Titles of Retrieved Documents:

R NS 1. FR881027-0027
R NS 2. AP881031-0251 AGENCIES AND RADIO OUT From AP Newsfeatures
R NS 3. FR881024-0194
R NS 4. AP900901-0010 Death Threats Over Marine Mammals
NR NS 5. SJMN91-06011130 DEEP-SEA TEST OF WASTE DUMPING PROPOSED SCIENTISTS SAY OCEANS COULD SPARE LAND, AIR
R NS 6. AP901113-0077 Monterey Looks for Federal Law to Help Evict Sea Lions
NR NS 7. AP880730-0024 No Syringes, But Western Swimmers Do Contend with Sharks, Sewage Spills With AM-Sea Scare, Bjt
NR NS 8. AP901112-0005 Cruise Lines Trying to be Eco-Friendly with Garbage
NR NS 9. AP880801-0020 Gumshoes On Garbage Zero In On Beach-Defiling Wastes LaserPhoto NY5
NR NS 10. FR88616-0064

18:16 USER: Undo Relevance Marking for document ranked 1 with document ID FR881027-0027
18:16 USER: "That's out of there."
18:18 USER: Display Full Text of Document ranked 2

18:19 SYS:
AGENCIES AND RADIO OUT From AP Newsfeatures
AP881031-0251
SEATTLE (AP)

EDITOR'S NOTE _ Growing herds of California sea lions that converge on Puget Sound each fall are becoming a nuisance, raiding the fisheries and getting in the way of divers. It's a Catch 22 for environmentalists that the law intended to protect endangered marine mammals also has produced a threat to some endangered fish.
By KATIA BLACKBURN Associated Press Writer
Fishermen, divers and coastal residents on Puget Sound are being frustrated by large herds of sea lions and harbor seals feasting on bottom fish, salmon and endangered steelhead trout headed upstream to spawn.
The federal law that protects endangered whales and other marine mammals prohibits killing the sea lions which kill and eat more than half of the steelhead run each year.
Up to 2,000 sea lions converge on Puget Sound each fall and their numbers are on the rise, wildlife experts say.
In addition to their threat to the fisher

[remaining text deleted...]

18:27 USER: "Fisheries. Sea lions. No, sea lions have to go. This is really bad. I'm getting rid of the sea lion stuff."
18:30 USER: Undo Relevance Marking for document ranked 2 with document ID AP881031-0251

18:32 USER: Display Full Text of Document ranked 3

18:38 SYS:

FR881024-0194

Federal Register / Vol. 53, No. 205 / Monday, October 24, 1988
/ Unified Agenda Federal Register / Vol. 53, No. 205 / Monday, October 24, 1988
/ Unified Agenda SUBJECT INDEX TO THE UNIFIED AGENDA OF FEDERAL REGULATIONS Sequence Number Sequence Number Sequence Number Sequence Number A
Accountants, peer review 3982
Accrual basis 780
Airline uniform system 2068
Automated clearing house 2116
Bills of lading 3088
Bonds 2118, 2120
Colleges and universities 607, 3169
Cost principles 3166
Emission standards 2957
Job training audit 1424
Loans 3727
Motor carriers 3823
Rail costing system 3814
Reclamation actions 2117
State and local governments 417, 454, 3166
Treasury checks 2117
Airline tickets 1561
American viticultural areas 2132
Athletes and athletic events 2124
Distilled spirits 2123, 2124, 2140
Food store practices 3805

[remaining text deleted...]

18:45 USER: "Keep that Federal Register thing in there, but out go the marine mammals."
18:47 USER: Undo Relevance Marking for document ranked 4 with document ID AP900901-0010
18:47 USER: "Out go the marine mammals."
18:51 USER: Undo Relevance Marking for document ranked 6 with document ID AP901113-0077
18:51 USER: "Out go the sea lions."
18:52 USER: Mark as Relevant document ranked 6 with document ID AP901113-0077
18:52 USER: Undo Relevance Marking for document ranked 6 with document ID AP901113-0077

18:53 USER: "Somewhere in there is my law of the sea piece. I'm adding in regulation as a synonym for law. Laws, regulation, treaties. I'm searching just as I would in Boolean. Laws of the sea, oceans, regulations, treaties, pacts, agreements, rivers, water. What the hell, go do it."
19:48 USER: Run Query
19:49 SYS: Submitted Query:
laws of the sea oceans regulations treaties pacts agreements rivers water
and 4 marked documents
20:00 USER: "I probably could have just put in that law of the sea, too. But so what, it wouldn't have turned up anything."
20:10 USER: "I'm starting to run out of time here. Another few minutes and that's it. This is slow. It seems slow."

20:30 SYS: Result of Query Evaluation: 150 documents retrieved
20:34 SYS: Display of Titles of Retrieved Documents:

R NS 1. FR881024-0194
NR NS 2. FR881027-0027
NR NS 3. FR881028-0026
NR NS 4. FR88504-0025
NR NS 5. FR88818-0051
NR NS 6. FR88616-0064
NR NS 7. FR88518-0026
NR NS 8. FR88929-0045
NR NS 9. FR88928-0020
NR NS 10. SJMN91-06106167 NUCLEAR PLANT BALKS AT ACTING TO SAVE FISH SAN ONOFRE REGULATORS DEBATE DAMAGE STUDY

20:45 USER: "Well, my number one document is relevant. It's that Federal Register thing. I wonder, though, where my other relevant marked things are."
20:47 USER: Scroll List of Titles of Retrieved Documents
20:49 SYS: Display of Titles of Retrieved Documents:

NR NS 11. FR88219-0014
NR NS 12. AP901114-0042 UNDATED: and 1992.
NR NS 13. FR88129-0069
NR NS 14. FR88728-0077
NR NS 15. FR88211-0134
NR NS 16. FR881110-0025
NR NS 17. FR88824-0017
NR NS 18. FR881025-0034
NR NS 19. FR88826-0028
NR NS 20. FR881109-0010

20:52 USER: "Interestingly enough, all of this stuff is from the Federal Register. It's a trick question, I guess."
20:56 USER: Scroll List of Titles of Retrieved Documents
20:58 SYS: Display of Titles of Retrieved Documents:

NR NS 21. FR881109-0021
NR NS 22. FR88928-0134
NR NS 23. FR88927-0030
NR NS 24. FR88728-0117
NR NS 25. FR881024-0087
NR NS 26. AP901112-0005 Cruise Lines Trying to be Eco-Friendly with Garbage
NR NS 27. FR881129-0116
NR NS 28. FR88516-0016
NR NS 29. FR88817-0151
NR NS 30. FR88920-0015

21:00 USER: "There's that garbage cruise from the AP."
21:03 USER: Scroll List of Titles of Retrieved Documents
21:06 SYS: Display of Titles of Retrieved Documents:

NR NS 31. SJMN91-06178174 SPOILS FROM BOTTOM OF BAY COULD RESTORE SUISUN MARSH NOVEL DREDGING PLAN WOULD SPAWN WETLAND
NR NS 32. FR88121-0023
NR NS 33. FR88603-0014
NR NS 34. FR88818-0049
NR NS 35. FR88831-0030
NR NS 36. FR88927-0146
NR NS 37. FR88818-0017
NR NS 38. FR88721-0030
NR NS 39. FR88715-0124

NR NS 40. FR88923-0038

21:05 USER: "All Federal Register. I like it. It seems promising."
21:06 USER: Scroll List of Titles of Retrieved Documents
21:08 SYS: Display of Titles of Retrieved Documents:

NR NS 41. FR881107-0012
NR NS 42. FR88216-0002
NR NS 43. FR88211-0002
NR NS 44. FR88927-0013
NR NS 45. FR881116-0138
NR NS 46. FR881101-0022
NR NS 47. FR881118-0132
NR NS 48. FR881020-0052
NR NS 49. FR88707-0101
NR NS 50. FR88609-0048

21:10 USER: Scroll List of Titles of Retrieved Documents
21:12 SYS: Display of Titles of Retrieved Documents:

NR NS 51. FR88701-0154
NR NS 52. FR88106-0016
NR NS 53. FR88504-0121
NR NS 54. FR88708-0007
NR NS 55. FR88513-0158
NR NS 56. FR88906-0033
NR NS 57. FR88816-0008
NR NS 58. FR88816-0007
NR NS 59. AP901029-0103 Conference Considers Ban on Toxic Ocean Dumping; US Wants More Study
NR NS 60. SJMN91-06297043 NEARSHORE TRAWLING OUTLAWED HALIBUT REGULATION TAKES EFFECT IN 1993

21:15 USER: "I think what I'm gonna do with this is look at some of the top ones. I want to make sure that I get that law-of-sea."

21:31 USER: Scroll List of Titles of Retrieved Documents (3 times)
21:34 SYS: Display of Titles of Retrieved Documents:

NR NS 8. FR88929-0045
NR NS 9. FR88928-0020
NR NS 10. SJMN91-06106167 NUCLEAR PLANT BALKS AT ACTING TO SAVE FISH SAN ONOFRE REGULATORS DEBATE DAMAGE STUDY
NR NS 11. FR88219-0014
NR NS 12. AP901114-0042 UNDATED: and 1992.
NR NS 13. FR88129-0069
NR NS 14. FR88728-0077
NR NS 15. FR88211-0134
NR NS 16. FR881110-0025
NR NS 17. FR88824-0017

21:36 USER: Scroll List of Titles of Retrieved Documents (4 times)
21:38 SYS: Display of Titles of Retrieved Documents:

R NS 1. FR881024-0194
NR NS 2. FR881027-0027
NR NS 3. FR881028-0026
NR NS 4. FR88504-0025
NR NS 5. FR88818-0051
NR NS 6. FR88616-0064
NR NS 7. FR88518-0026
NR NS 8. FR88929-0045
NR NS 9. FR88928-0020
NR NS 10. SJMN91-06106167 NUCLEAR PLANT BALKS AT ACTING TO SAVE FISH SAN ONOFRE REGULATORS DEBATE DAMAGE STUDY
21:49 USER: Adds query terms.
21:52 USER: Run Query
21:52 SYS: Submitted Query:
laws of the sea oceans regulations treaties pacts agreements rivers water law-of-sea
and 4 marked documents
22:20 USER: "This is the worst search I've ever done in my life. It feels totally unnatural. It seems sloppy. I could potentially get really great stufff this way. But what would happen if I had a million documents? Several million. Can you afford to be this sloppy? Can the technology keep pace with you? If I was on the network would it be even slower? And, why am I doing this? Who's asking this question, and why are they asking it? It's beyond my imagination."

22:37 SYS: Result of Query Evaluation: 150 documents retrieved
22:42 SYS: Display of Titles of Retrieved Documents:

R NS 1. FR881024-0194
NR NS 2. FR881027-0027
NR NS 3. FR881028-0026
NR NS 4. FR88504-0025
NR NS 5. FR88818-0051
NR NS 6. FR88616-0064
NR NS 7. FR88518-0026
NR NS 8. FR88929-0045
NR NS 9. FR88928-0020
NR NS 10. FR88219-0014

22:44 USER: "Well, the number one document is still the number one document."
22:46 USER: Save document ranked 5 with document ID FR88818-0051
22:48 USER: Undo Save for document ranked 5 with document ID FR88818-0051
22:49 USER: Scroll List of Titles of Retrieved Documents
22:52 SYS: Display of Titles of Retrieved Documents:

NR NS 11. AP901114-0042 UNDATED: and 1992.
NR NS 12. SJMN91-06106167 NUCLEAR PLANT BALKS AT ACTING TO SAVE FISH SAN ONOFRE REGULATORS DEBATE DAMAGE STUDY
NR NS 13. FR88129-0069
NR NS 14. FR88728-0077
NR NS 15. FR88211-0134
NR NS 16. FR881110-0025
NR NS 17. FR88824-0017
NR NS 18. FR881025-0034
NR NS 19. FR881109-0010
NR NS 20. FR881109-0021

22:56 USER: "And the Federal Register is still the source of choice. There are a couple of newspaper articles in the top twenty. But that law of the sea type thing, I have no idea where it is."
22:58 USER: Scroll List of Titles of Retrieved Documents
23:00 SYS: Display of Titles of Retrieved Documents:

NR NS 21. FR88826-0028
NR NS 22. FR88928-0134
NR NS 23. FR88927-0030

NR NS 24. AP901112-0005 Cruise Lines Trying to be Eco-Friendly with Garbage
NR NS 25. FR88728-0117
NR NS 26. FR88516-0016
NR NS 27. FR88121-0023
NR NS 28. FR881024-0087
NR NS 29. FR88817-0151
NR NS 30. FR881129-0116

23:01 USER: "Garbage cruise. Still, all Federal Register."
23:05 USER: Scroll List of Titles of Retrieved Documents
23:08 SYS: Display of Titles of Retrieved Documents:

NR NS 31. FR88920-0015
NR NS 32. SJMN91-06178174 SPOILS FROM BOTTOM OF BAY COULD RESTORE SUISUN MARSH NOVEL DREDGING PLAN WOULD SPAWN WETLAND
NR NS 33. FR88603-0014
NR NS 34. FR88831-0030
NR NS 35. FR88927-0146
NR NS 36. FR88818-0049
NR NS 37. FR88721-0030
NR NS 38. FR88715-0124
NR NS 39. FR881107-0012
NR NS 40. FR88923-0038

23:06 USER: "San Jose Mercury story. It's still only pulling up 150 documents."
23:11 USER: Scroll List of Titles of Retrieved Documents
23:14 SYS: Display of Titles of Retrieved Documents:

NR NS 41. FR881116-0138
NR NS 42. FR88927-0013
NR NS 43. FR88818-0017
NR NS 44. FR88707-0101
NR NS 45. FR881118-0132
NR NS 46. FR881020-0052
NR NS 47. FR88701-0154
NR NS 48. FR881101-0022
NR NS 49. FR88609-0048
NR NS 50. FR88216-0002

23:17 USER: "Ok, I'm coming back to my number one article. I think I'm gonna scan about ten of them. I don't know what the relevance feedback is adding, and I wonder if there's a place to take a look at that. I should have paid more attention to the tutorial. Oh, well."

23:18 USER: Scroll List of Titles of Retrieved Documents
23:22 SYS: Display of Titles of Retrieved Documents:

R NS 1. FR881024-0194
NR NS 2. FR881027-0027
NR NS 3. FR881028-0026
NR NS 4. FR88504-0025
NR NS 5. FR88818-0051
NR NS 6. FR88616-0064
NR NS 7. FR88518-0026
NR NS 8. FR88929-0045
NR NS 9. FR88928-0020
NR NS 10. FR88219-0014

23:30 USER: Display Full Text of Document ranked 1
23:35 USER: "It's not even bringing up the documents quick."
23:40 SYS:
FR881024-0194

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/ Unified Agenda Federal Register / Vol. 53, No. 205 / Monday, October 24, 1988
/ Unified Agenda SUBJECT INDEX TO THE UNIFIED AGENDA OF FEDERAL REGULATIONS Sequence Number Sequence Number Sequence Number Sequence Number A
Accountants, peer review 3982
Accrual basis 780
Airline uniform system 2068
Automated clearing house 2116
Bills of lading 3088
Bonds 2118, 2120
Colleges and universities 607, 3169
Cost principles 3166
Emission standards 2957
Job training audit 1424
Loans 3727
Motor carriers 3823
Rail costing system 3814
Reclamation actions 2117
State and local governments 417, 454, 3166
Treasury checks 2117
Airline tickets 1561
American viticultural areas 2132
Athletes and athletic events 2124
Distilled spirits 2123, 2124, 2140
Food store practices 3805

[remaining text deleted...]
23:42 USER: "Here's this table of contents.Subject indexed to the unified agenda of federal regulations. I don't know what it is."

23:55 USER: Scroll Full Text of Document to next matched keyword (24 times)

24:12 USER: "I have no idea what I've done here."
24:15 USER: Display Full Text of Document ranked 2
24:19 SYS:

FR881027-0027
Federal Register / Vol. 53, No. 208 / Thursday, October 27, 1988
/ Proposed Rules
DEPARTMENT OF TRANSPORTATION Coast Guard 33 CFR Parts 151, 155 and 158 46 CFR Part 25 [CGD 88-002] RIN 2115-AC89 Regulations Implementing the Pollution Prevention Requirements of
Annex V of MARPOL 73/78 AGENCY: Coast Guard, DOT.
ACTION: Notice of proposed rulemaking.
SUMMARY: The Coast Guard proposes rules to implement the requirements
of the ``Act to Prevent Pollution from Ships," as recently amended by
Congress. These rules will implement Annex V of the International Convention
for the Prevention of Pollution by Ships, 1973 entitled ``Regulations for
the Prevention of Pollution by Garbage by Ships." These regulations would

apply to marine craft of any size or type, including commercially operated
ships and fishing vessels, uninspected vessels, recreational boats, oil
rigs and platforms. These proposed rules also specify that ports and terminals,
including recreational boat

[remaining text deleted...]
24:32 USER: "I gotta stop."
24:32 USER: Display Full Text of Document ranked 3
24:35 SYS:

FR881028-0026
Federal Register / Vol. 53, No. 209 / Friday, October 28, 1988
/ Rules and Regulations
DEPARTMENT OF COMMERCE National Oceanic and Atmospheric Administration 15 CFR Part 922 [Docket No. 60469-7005] National Marine Sanctuary Program Regulations AGENCY: Office of Ocean and Coastal Resource Management (OCRM),
National Ocean Service (NOS), National Oceanic and Atmospheric Administration
(NOAA), Commerce.
ACTION: Final rule.
SUMMARY: These final regulations implement the provisions of the
Marine Sanctuaries Amendments of 1984, Title I of Pub. L. 98-498 (16 U.S.C.
1431
et seq.) (the Act or the Amendments). While the Amendments build
upon the foundation established in the previous Marine Sanctuary Program
regulations (48 FR 24296 (1983)), revisions are necessary to reflect procedural
and some policy changes of the Amendments.
DATE: These regulations are effective November 28, 1988.
FOR FURTHER INFORMATION CONTACT: Joseph A. Uravitch, Chief, Marine
and E

[remaining text deleted...]
24:44 USER: Display Full Text of Document ranked 4
24:46 SYS:

FR88504-0025
Federal Register / Vol. 53, No. 86 / Wedneday, May 4, 1988 / Rules
and Regulations
DEPARTMENT OF COMMERCE National Oceanic and Atmospheric Administration 50 CFR Part 661 [Docket No. 80482-8082] Ocean Salmon Fisheries off the Coasts of Washington, Oregon, and California AGENCY: National Marine Fisheries Service (NMFS), NOAA, Commerce.
ACTION: Emergency interim rule; request for comments.
SUMMARY: The Secretary of Commerce (Secretary) issues an emergency
interim rule to establish fishery management measures for the commercial
and recreational ocean salmon fisheries off Washington, Oregon, and California
for 1988. The management measures are intended to prevent overfishing and
to apportion the ocean harvest equitably among non-Indian commercial and
recreational and treaty Indian fisheries. The regulations also are calculated
to allow a portion of the salmon runs to escape the ocean fisheries to
provide for Indian and non-Indian inside fisheries and spawning. Most

[remaining text deleted...]
24:59 USER: "I suppose that if you looked through these you could find out what are the laws of the sea, and are they uniform. But, was I supposed to find news stories?"

25:00 USER: Display Full Text of Document ranked 5
25:06 SYS:

FR88818-0051
Federal Register / Vol. 53, No. 160 / Thursday, August 18, 1988
/ Proposed Rules
DEPARTMENT OF THE INTERIOR Minerals Management Service 30 CFR Part 282 Operations in the Outer Continental Shelf for Minerals Other Than
Oil, Gas, and Sulphur AGENCY: Minerals Management Service, Interior.
ACTION: Proposed rule.
SUMMARY: The proposed rule would establish a separate set of general
regulations designed to govern postlease discovery, delineation, development,
and production of minerals other than oil, gas, and sulphur within the
Outer Continental Shelf (OCS) of the United States. The proposed rule recognizes
the special circumstances, issues, and requirements associated with those
OCS minerals. It establishes practices and procedures for wise management
of OCS resources, allowing balanced orderly postlease discovery, delineation,
development, and production of minerals other than oil, gas, and sulphur,
while protecting the human, marine, and coastal environments; pre

[remaining text deleted...]
25:25 USER: "I like it. It's good. But I would feel a lot more comfortable with news stories about it. No news stories are coming up."

25:25 USER: Display Full Text of Document ranked 6
25:26 SYS:

FR88616-0064
National Oceanic and Atmospheric Administration [Docket No. 80520-8120] Foreign Fishing; Bering Sea Fishermen's Association AGENCY: National Marine Fisheries Service (NMFS), NOAA, Commerce.
ACTION: Notice of decision on petition for rulemaking; Bering
Sea Fishermen's Association.
SUMMARY: NOAA publishes notice of its decision on a petition for
rulemaking submitted by the Bering Sea Fisherman's Association. The notice
summarizes the comments received and NOAA's decision not to undertake the
rulemaking requested by the petition at this time. The agency continues
to work to develop a comprehensive solution to address issues relating
to the harvest of U.S. exclusive economic zone (EEZ) resources from waters
beyond the EEZ.
SUPPLEMENTARY INFORMATION: Background

NOAA published a notice of receipt of a petition for rulemaking submitted
by the Bering Sea Fishermen's Association on November 5, 1987 (52 FR 42469).
The petition asked the United States Department of C

[remaining text deleted...]
25:40 USER: "I'm going to undo relevance feedback on that document. I better hurry up."
25:42 USER: Undo Relevance Marking for document ranked 1 with document ID FR881024-0194
26:05 USER: Run Query
26:05 SYS: Submitted Query:
laws of the sea oceans regulations treaties pacts agreements rivers water law-of-sea
and 3 marked documents
26:15 SYS: Result of Query Evaluation: 150 documents retrieved

26:15 USER: "It doesn't make any bit of difference."
26:17 SYS: Display of Titles of Retrieved Documents:

R NS 1. AP881101-0176 U.S. Votes Against Law Of Sea Convention
NR NS 2. FR881027-0027

NR NS 3. FR881024-0194
NR NS 4. AP900724-0203   Part III: The Catastrophe A Great Sea Is Dying; `Hundreds Will Die With It' LaserPhoto NY307 of July 24; Graphics SOVNEWSO3, SOVNEWSOL
NR NS 5. FR88616-0064
R NS 6. FR88105-0063
NR NS 7. FR881028-0026
NR NS 8. SJMN91-06324011   SOVIET LAKE'S DEATH MIRRORED IN CALIFORNIA
NR NS 9. FR88518-0026
NR NS 10. FR88818-0051

26:35 USER: "Huh. There's my law of sea convention article. And another relevant article pops up as well. I don't know what this other thing up here is. And I get more newspaper articles."
26:36 USER: Display Full Text of Document ranked 6
26:37 SYS:

FR88105-0063
[Docket No. 87-29] Hemisphere Navigation Co., Inc. v. Sea-Land Service, Inc.; Filing of Complaint and Assignment

Notice is given that a complaint filed by Hemisphere Navigation Co., Inc. (``Hemisphere'') against Sea-Land Service, Inc. (``Sea-Land'') was served December 29, 1987. Hemisphere alleges that Sea-Land has violated various sections of the Intercoastal Shipping Act of 1933, 46 U.S.C. app. 843, the Shipping Act, 1916, 46 U.S.C. app. 801, and the Shipping Act of 1984, 46 U.S.C. app. 1701, by wrongfully charging and demanding, collecting and receiving ocean freight and terminal charges in excess of what was properly applicable pursuant to Sea-Land's Tariff FMC-F-No. 61, in effect between San Juan, Puerto Rico and U.S. Atlantic and Gulf ports.

This proceeding has been assigned to Administrative Law Judge Charles E. Morgan (``Presiding Officer''). Hearing in this matter, if any is held, shall commence within the time limitations prescribed in 46 CFR 502.61. Th

[remaining text deleted...]

26:41 USER: "I'm gonna get rid of number 6."
26:42 USER: Undo Relevance Marking for document ranked 6 with document ID FR88105-0063

26:42 USER: "I'll scan down and see if anything else is marked relevant, in the top 20, 30 or so."
26:44 USER: Scroll List of Titles of Retrieved Documents
26:47 SYS: Display of Titles of Retrieved Documents:

NR NS 11. AP900201-0221   Dead Sea Was an Active Trade Route as Far Back as 2,300 Years
NR NS 12. FR88504-0025
NR NS 13. AP901114-0042   UNDATED: and 1992.
NR NS 14. AP881031-0251   AGENCIES AND RADIO OUT From AP Newsfeatures
NR NS 15. PT3-05154561   Automated all-weather cargo transfer system
NR NS 16. AP880816-0208   Nile Threatening To Flood Khartoum
NR NS 17. FR88927-0030
NR NS 18. AP900901-0010   Death Threats Over Marine Mammals
NR NS 19. AP901220-0197   Echoes from the Deep: Clues to Changes in Sea Level
NR NS 20. SJMN91-06185080   AQUARIUM DRIVES WONDERS OF THE SEA TO LABOR-CAMP KIDS

26:49 USER: Scroll List of Titles of Retrieved Documents
26:52 SYS: Display of Titles of Retrieved Documents:

NR NS 21. SJMN91-06226074   THE SEARCH FOR SEA LEVEL FOR RESEARCHERS OF GLOBAL WARMING, THE OCEAN'S HEIGHT PROVES AN ELUSIVE MEASURE
NR NS 22. SJMN91-06015044   WILSON'S BACKING ON REFUGE SOUGHT
NR NS 23. AP880623-0017   After Nearly Five Months Adrift, Fishermen Say Sea Still Beckons
NR NS 24. AP880817-0026   US Research Vessel Makes Breakthroughs in Restricted Soviet Zone
NR NS 25. SJMN91-06178297   STANFORD GEOLOGY PROF CITED
NR NS 26. AP900622-0055   Administrative Law Judge Fines Fishermen in Turtle Case
NR NS 27. WSJ910213-0077   A Fragile Ecosystem   Off Bahrain Faces   Ravages of Oil Slick   ---   It Abounds With Marine Life   That Fishermen Rely On;   The Shy Dugong's Peril   ----   By Ken Wells   Staff Reporter of The Wall Street Journal
NR NS 28. AP881110-0125   Scientists Discover New Undersea Hot Springs
NR NS 29. AP900203-0031   Washington State Wants to Kill Troublesome Sea Lions
NR NS 30. SJMN91-06242127   A WILD RIDE OFF THE CANADA COAST

26:53 USER: "I know that there's one other relevant document lurking there somewhere, but I don't have time to scan down the list. It would be nice if I didn't have to scan the list to find it."
26:54 USER: Scroll List of Titles of Retrieved Documents (7 times)
26:58 SYS: Display of Titles of Retrieved Documents:

R NS 1. AP881101-0176   U.S. Votes Against Law Of Sea Convention
NR NS 2. FR881027-0027
NR NS 3. FR881024-0194
NR NS 4. AP900724-0203   Part III: The Catastrophe A Great Sea Is Dying; `Hundreds Will Die With It' LaserPhoto NY307 of July 24; Graphics SOVNEWSO3, SOVNEWSOL
NR NS 5. FR88616-0064
NR NS 6. FR88105-0063
NR NS 7. FR881028-0026
NR NS 8. SJMN91-06324011   SOVIET LAKE'S DEATH MIRRORED IN CALIFORNIA
NR NS 9. FR88518-0026
NR NS 10. FR88818-0051

27:01 USER: Run Query
27:02 SYS: Submitted Query:
laws of the sea oceans regulations treaties pacts agreements rivers water law-of-sea
and 2 marked documents
27:09 SYS: Result of Query Evaluation: 150 documents retrieved
27:11 SYS: Display of Titles of Retrieved Documents:

R NS 1. AP881101-0176   U.S. Votes Against Law Of Sea Convention
NR NS 2. FR881027-0027
NR NS 3. FR881024-0194
NR NS 4. AP900724-0203   Part III: The Catastrophe A Great Sea Is Dying; `Hundreds Will Die With It' LaserPhoto NY307 of July 24; Graphics SOVNEWSO3, SOVNEWSOL
NR NS 5. FR881028-0026
NR NS 6. FR88616-0064
NR NS 7. FR88818-0051
NR NS 8. SJMN91-06324011   SOVIET LAKE'S DEATH MIRRORED IN CALIFORNIA
NR NS 9. FR88504-0025
NR NS 10. AP900201-0221   Dead Sea Was an Active Trade Route as Far Back as 2,300 Years

27:25 USER: "I don't like it. There's lots of Federal Register stuff. Maybe there's a relationship between these documents."
27:26 USER: Scroll List of Titles of Retrieved Documents

27:28 SYS: Display of Titles of Retrieved Documents:

NR NS 11. FR88518-0026
NR NS 12. AP901114-0042 UNDATED: and 1992.
NR NS 13. PT3-05154561 Automated all-weather cargo transfer system
NR NS 14. AP880816-0208 Nile Threatening To Flood Khartoum
NR NS 15. FR88927-0030
NR NS 16. AP881031-0251 AGENCIES AND RADIO OUT From AP Newsfeatures
NR NS 17. FR88817-0020
NR NS 18. AP880707-0139 Safety Questions Over North Sea Oil Rig
NR NS 19. WSJ910213-0077 A Fragile Ecosystem Off Bahrain Faces Ravages of Oil Slick --- It Abounds With Marine Life That
Fishermen Rely On; The Shy Dugong's Peril ---- By Ken Wells Staff Reporter of The Wall Street Journal
NR NS 20. AP900901-0010 Death Threats Over Marine Mammals

27:40 USER: "From twelve down to twenty, this is no good. That Federal Register document is very helpful. It's the right combination of I don't know what."
27:47 USER: Scroll List of Titles of Retrieved Documents
27:50 SYS: Display of Titles of Retrieved Documents:

NR NS 21. WSJ900514-0065 LAW ---- By Milo Geyelin
NR NS 22. AP900622-0055 Administrative Law Judge Fines Fishermen in Turtle Case
NR NS 23. AP880711-0049 Three More Bodies Found In North Sea Platform Disaster With PM-Oil City, Bjt
NR NS 24. AP881029-0084 Venice Launches Important Stage Of Flood Control Plan
NR NS 25. AP901220-0197 Echoes from the Deep: Clues to Changes in Sea Level
NR NS 26. AP880817-0026 US Research Vessel Makes Breakthroughs in Restricted Soviet Zone
NR NS 27. AP880310-0236 Twenty-Three Nations Sign Treaty to Combat Terrorism at Sea
NR NS 28. FR88516-0048
NR NS 29. AP901029-0103 Conference Considers Ban on Toxic Ocean Dumping; US Wants More Study
NR NS 30. SJMN91-06105017 IT TAKES TWO TO TONGA HONORARY YACHTIES FALL IN WITH A BAD CROWD, AND EVERYTHING GOES DOWNHILL

27:51 USER: Scroll List of Titles of Retrieved Documents
27:53 SYS: Display of Titles of Retrieved Documents:

NR NS 31. SJMN91-06222181 CAPTAIN'S BEHAVIOR WAS IRRESPONSIBLE
NR NS 32. AP900213-0069 Soviets Push for Expanded `Open Skies' Pact
NR NS 33. SJMN91-06185080 AQUARIUM DRIVES WONDERS OF THE SEA TO LABOR-CAMP KIDS
NR NS 34. FR88105-0063
NR NS 35. AP881025-0139 U.S.-Soviet Negotiators Call For Halt To Overfishing
NR NS 36. AP880708-0160 Reconstruction of Piper Alpha Disaster
NR NS 37. AP880729-0241 Scientists Find Light Source At Bottom Of Pacific
NR NS 38. SJMN91-06226074 THE SEARCH FOR SEA LEVEL FOR RESEARCHERS OF GLOBAL WARMING, THE OCEAN'S HEIGHT PROVES AN ELUSIVE MEASURE
NR NS 39. SJMN91-06228064 SEA WORLD PROBE HINGES ON AUTOPSY
NR NS 40. AP900504-0058 Driftnet Fishing Boats Spotted Bearing North Korean Flags

27:55 USER: Scroll List of Titles of Retrieved Documents
27:57 SYS: Display of Titles of Retrieved Documents:

NR NS 41. FR88219-0014
NR NS 42. WSJ920323-0011 China Has Technology to Give Bombers Long Flight Range, Worrying Neighbors ---- By Nayan Chanda Staff Reporter of The Wall Street Journal
NR NS 43. AP881110-0125 Scientists Discover New Undersea Hot Springs
NR NS 44. AP900203-0031 Washington State Wants to Kill Troublesome Sea Lions
NR NS 45. SJMN91-06117076 ANGER RUNS WHERE THE SALMON USED TO
NR NS 46. SJMN91-06015044 WILSON'S BACKING ON REFUGE SOUGHT
NR NS 47. AP880623-0017 After Nearly Five Months Adrift, Fishermen Say Sea Still Beckons
NR NS 48. SJMN91-06242127 A WILD RIDE OFF THE CANADA COAST
NR NS 49. WSJ920309-0003 Freer Markerts Would Protect Northwest Salmon ---- By Zach Willey
NR NS 50. FR881109-0010

27:56 USER: "I feel lke an idiot, going down here looking for other potentially marked relevant documents. Oh, the screen tells how many there are. Only one."
27:58 USER: Scroll List of Titles of Retrieved Documents
28:01 SYS: Display of Titles of Retrieved Documents:

NR NS 51. FR88121-0023
NR NS 52. AP900512-0030 Sea Lions Still Making Pier 39 Their Home LaserPhoto FX1
NR NS 53. AP880823-0088
NR NS 54. FR88506-0038
NR NS 55. FR88201-0084
NR NS 56. WSJ900822-0106 LEISURE & ARTS -- Bookshelf: What the Founding Fathers Really Wanted ---- By Thomas P. Griesa
NR NS 57. AP880422-0066 Nile Delta Slowly Eroding Into Sea, Researcher Says
NR NS 58. SJMN91-06268085 BREAST-IMPLANT WARNING ULTRASOUND RECOMMENDED IN ADDITION TO MAMMOGRAM
NR NS 59. FR881024-0087
NR NS 60. AP881015-0132 Oil Rig Module Thought To Contain Bodies Raised To Surface

28:02 USER: Scroll List of Titles of Retrieved Documents
28:05 SYS: Display of Titles of Retrieved Documents:

NR NS 61. AP880405-0032 Oil Men Tend Garden On North Sea Oil Rig
NR NS 62. AP900319-0109 Sewage Dumped at Sea Poses Health Risks to Swimmers, Seafood Lovers
NR NS 63. FR881202-0043
NR NS 64. AP880822-0251 Rising seas threaten pacific islands
NR NS 65. SJMN91-06178297 STANFORD GEOLOGY PROF CITED
NR NS 66. AP900928-0015 Water Well Suggests Ancient Man Wwas Smarter Than We Thought
NR NS 67. AP881012-0028 Plutonium Shipment Plans Questioned; Japan May Provide Armed Escort
NR NS 68. AP880922-0122 Oil Rig Fire Forces Evacuation; One Missing
NR NS 69. FR881206-0025
NR NS 70. AP900602-0072 Endangered Pelican and Sea Gull Eggs Stolen

28:05 USER: Scroll List of Titles of Retrieved Documents
28:07 SYS: Display of Titles of Retrieved Documents:

NR NS 71. FR88928-0020
NR NS 72. PT3-05176471 Arrangement and method for protecting components in subsea systems
NR NS 73. WSJ900521-0089 U.S.-Soviet Summit to Yield Arms Pacts; No Agreement in Sight on Europe, Trade ---- By Walter S. Mossberg Staff Reporter of The Wall Street Journal
NR NS 74. FR88831-0030
NR NS 75. AP900517-0140 Panel Calls For Excluder Devices On Trawlers To Save Endangered Sea Turtles
NR NS 76. AP880813-0154 Irrigation Killing Aral Sea, Report Says
NR NS 77. AP900129-0102 U.S. Ships Enter Soviet-Dominated Black Sea
NR NS 78. AP880927-0224 Foreign Submarines Still Elude Swedish Hunters
NR NS 79. FR88914-0104
NR NS 80. AP880319-0021 Adventurers Recount Unprecedented Row To Antarctica

28:07 USER: Scroll List of Titles of Retrieved Documents
28:10 SYS: Display of Titles of Retrieved Documents:

NR NS 81. AP901113-0077 Monterey Looks for Federal Law to Help Evict Sea Lions

NR NS 82. WSJ910805-0086 Hong Kong Proposes a Sewage Strategy --- But Funding Uncertainty Threatens to Trash Plans ---- By Steve Glain Staff Reporter of The Wall Street Journal
NR NS 83. SJMN91-06193189 DEVICE MAY BLOW WHISTLE ON MONTEREY'S SEA LIONS
NR NS 84. SJMN91-06168108 TRADE THE HIKING BOOTS FOR SOME FLIPPERS MARINE PRESERVES PROTECT IMPORTANT COASTAL HABITATS
NR NS 85. FR881025-0034
NR NS 86. WSJ910723-0130 LEISURE & ARTS: ...Humongous Marine Predators Underwater ---- By James P. Sterba
NR NS 87. AP880528-0058 With PM-Summit-Reagan Bjt Reagan, Gorbachev Expected To Sign Fisheries Pact
NR NS 88. FR88818-0049
NR NS 89. AP881116-0076 Scandinavian Ministers Adopt Plan to Rescue Seas
NR NS 90. AP880725-0215 AGENCIES AND RADIO OUT From AP Newsfeatures

28:10 USER: Scroll List of Titles of Retrieved Documents
28:13 SYS: Display of Titles of Retrieved Documents:

NR NS 91. WSJ900620-0136 Troubled Waters: Oil Tankers' Safety Is Assailed as Mishaps Average Four a Week - Ships Are Ill-Maintained, Some Crews Are Fatigued, Harbor Traffic Is a Mess - Game of `Chicken' in Houston By Caleb Solomon and Daniel Machalaba Staff Reporters of The Wall Street Journal
NR NS 92. FR88516-0016
NR NS 93. AP880725-0197 Venice Preparing to Test System to Protect It from Sea
NR NS 94. AP880315-0048 U.S.-Canada Free-Trade Pact To Help New England Economy, Study Says Handicapped People Protest DOT Transportation Policies NOAA Issues $100,000 In Fines For Illegal Fishing In Bering Sea Former Reagan Aide's Sentencing Postponed
NR NS 95. SJMN91-06161137 U.S. SENDS MEDICAL AID TO SOVIET REPUBLIC SUPPLIES FOR VICTIMS OF ARAL SEA POLLUTION
NR NS 96. FR88212-0146
NR NS 97. AP881224-0065 Loose Oil Storage Vessel Drifts 13 Miles
NR NS 98. AP880423-0166 U.S.-Soviet Talks On Bering Sea Adjourn With No Moratorium Agreement
NR NS 99. AP880526-0266 Mystery Oil Spills Endanger Ecology of Persian Gulf
NR NS 100. SJMN91-06226026 GLACIERS PRESENT A PUZZLE

28:14 USER: Scroll List of Titles of Retrieved Documents (7 times, back up to beginning of rank)
28:17 SYS: Display of Titles of Retrieved Documents:

R NS 1. AP881101-0176 U.S. Votes Against Law Of Sea Convention
NR NS 2. FR881027-0027
NR NS 3. FR881024-0194
NR NS 4. AP900724-0203 Part III: The Catastrophe A Great Sea Is Dying; `Hundreds Will Die With It' LaserPhoto NY307 of July 24; Graphics SOVNEWSO3, SOVNEWSOL
NR NS 5. FR881028-0026
NR NS 6. FR88616-0064
NR NS 7. FR88818-0051
NR NS 8. SJMN91-06324011 SOVIET LAKE'S DEATH MIRRORED IN CALIFORNIA
NR NS 9. FR88504-0025
NR NS 10. AP900201-0221 Dead Sea Was an Active Trade Route as Far Back as 2,300 Years

28:22 USER: "There's the Federal Register article. I'll mark it relevant and rerun my query."

28:24 USER: Mark as Relevant document ranked 3 with document ID FR881024-0194
28:26 USER: Run Query
28:26 SYS: Submitted Query:
laws of the sea oceans regulations treaties pacts agreements rivers water law-of-sea
and 3 marked documents

28:45 USER: "You put that Federal Register thing in there and it slows things down incredibly. How many terms does it add in? It just picks up a couple of extra terms. My query terms might have covered everything."
29:09 SYS: Result of Query Evaluation: 150 documents retrieved
29:13 SYS: Display of Titles of Retrieved Documents:

R NS 1. FR881024-0194
NR NS 2. FR881027-0027
NR NS 3. FR881028-0026
NR NS 4. FR88504-0025
NR NS 5. FR88818-0051
NR NS 6. FR88616-0064
NR NS 7. FR88518-0026
NR NS 8. FR88929-0045
NR NS 9. FR88928-0020
NR NS 10. SJMN91-06106167 NUCLEAR PLANT BALKS AT ACTING TO SAVE FISH SAN ONOFRE REGULATORS DEBATE DAMAGE STUDY
29:22 USER: "The law of the sea document disappears. Well, I don't care. This is going to have to be it."
29:23 USER: Scroll List of Titles of Retrieved Documents
29:26 SYS: Display of Titles of Retrieved Documents:

NR NS 11. FR88219-0014
NR NS 12. AP901114-0042 UNDATED: and 1992.
NR NS 13. FR88728-0077
NR NS 14. FR88129-0069
NR NS 15. FR88211-0134
NR NS 16. FR881110-0025
NR NS 17. FR88824-0017
NR NS 18. FR88826-0028
NR NS 19. FR881025-0034
NR NS 20. FR88928-0134

29:28 USER: Scroll List of Titles of Retrieved Documents
29:31 SYS: Display of Titles of Retrieved Documents:

NR NS 21. FR881109-0010
NR NS 22. FR881109-0021
R NS 23. AP881101-0176 U.S. Votes Against Law Of Sea Convention
NR NS 24. FR88728-0117
NR NS 25. FR88818-0017
NR NS 26. FR881024-0087
NR NS 27. FR881129-0116
NR NS 28. FR88818-0049
NR NS 29. AP901112-0005 Cruise Lines Trying to be Eco-Friendly with Garbage
NR NS 30. FR88216-0002

29:54 USER: "This is beyond my abilities. Ah, there it is, in the top 25. I think people could work with this. Something tells me the answer they would find is no, they're not uniform."

29:55 USER: Save Query
29:55 USER: "I'm not proud of it but I'm saving it."
30:01 USER: Query saved under name final

30:01 USER: Query read:
laws of the sea oceans regulations treaties pacts agreements rivers water law-of-sea

30:02 USER: with Relevance Feedback from 2 documents
30:08 USER: Stop Search