

It Has to be Good

A History of the
Petroleum Abstracts Service
at
The University of Tulsa



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Preface

This is the story of an uncommon partnership between industry and an academic institution. An industry segment had a need and a prominent university had the vision, talent and determination to fulfill that need. It is also the story of a great deal of hard work, innovation, occasional crisis and cooperation. It is the story of how an organization reflects the characteristics, experience and mindset of the men (and, so far, they have all been men) that led it. This, then, is the story of the Petroleum Abstracts Service at The University of Tulsa that began over 40 years ago.

We have attempted to make the story as interesting as possible, a challenge for someone trained as an engineer and computer professional. While some of the information presented here comes from surviving documents, particularly for the early years, much of it is based on memory and occasional hearsay. The reader will also encounter the occasional inside joke. For these offenses, and for any other deficiencies, the author accepts, however begrudgingly, full responsibility.

A Need and an Opportunity

The late 1950s was not a good time for the petroleum exploration and production industry. Following the resolution of the Suez crisis in 1956, a surplus of crude supply developed and the resulting decline in oil prices began to erode the economics of the industry. Exploration plans were canceled, development was delayed and most petroleum companies began instituting cost cutting measures.

One area the companies were carefully watching was the cost of developing and organizing the information needed by company professionals, particularly research scientists and engineers. Many companies were operating information services that required the abstracting and indexing of technical articles. This represented a great deal of duplicated effort and cost. Earlier, the American Petroleum Institute (API) had established a centralized information service for the refining and manufacturing (downstream) elements of the industry. This service, the Central Abstracting and Indexing Service (CAIS) was a fee-based service that most of the major oil companies subscribed to. There was a clear need for a similar service to cover exploration and production (upstream) operations. The API was asked by the oil companies to find a way to establish such a service.

Into this environment stepped a central figure in the founding of Petroleum Abstracts, Dr. Scott W. Walker. Walker had been appointed Dean of the College of Engineering in 1960. One of his goals was to seek opportunities that would enhance the reputation and support of the university as well as advance its educational mission. He found such an opportunity when Pan American Petroleum offered the college a large file of cataloged abstract cards covering petroleum technology. These seemed to fit well into the industry quest for a exploration and production abstracting service. The university

began to actively seek that service.

In addition to the university, three other organizations were trying to obtain this service:

- The API CAIS
- The University of Denver
- A commercial firm owned by J. J. Roark and R. T. Schweisberger

The API Research Committee was leaning towards asking the CAIS to take on this operation. However, at a meeting of the university's Board of Trustees during this period, one of the trustees, a prominent oil man, offered to call "Monty" to urge him to support The University of Tulsa.

Monty, it turned out, was Monroe Spaght, the president of Shell Oil Company who was a central figure in the API. The call apparently has some influence. Late in 1960 the API Research Committee recommended to the API Executive Committee that the job be given to the CAIS. The Executive Committee then offered the service to The University of Tulsa. Shortly afterwards, Walker wrote a memo to file that stated, in part, "From all of this it would appear that we are now in the abstracting business and should plan accordingly."

The seriousness of this development was pointed out at the end of the trustees meeting at which the acquisition of the service was announced when a trustee remarked to the university's President, Dr. Ben Graf Henneke, "You know Ben, it has to be good."

The university was indeed in the abstracting business and it fell to Walker to build a service that would be good.

Building a Service

Walker faced the challenge of creating an information service from the ground up in a very short time. The oil companies involved wanted the service to begin by January, 1961. In less than four months, staff had to be recruited, procedures had to be developed, printing had to be arranged and a bulletin had to be designed. In addition, there was a marketing job to be done; enough subscribers had to be found to make the service financially viable. Walker had two important resources in this endeavor, he had the enthusiastic support of Dr. Henneke and he had Dr. E. T. Guerrero.

Guerrero was chair of Petroleum Engineering and had been involved in the efforts to obtain the service for the university. He was given the task of building the service. In what must have been a very frantic time, Guerrero attacked the countless problems involved in this effort. His initial staff was comprised of the following:

E. T. Guerrero	Director
Winona C. Bridges	Secretary
Lela M. Jeffrey	Assistant Director

E. T. Guerrero
Clyde G. Strachan
Lucille Watson

Director
Assistant Professor
Stenographer

Much of the technical work was initially done by contract staff. The first printing contractor was Commercial Publishers of Tulsa. The journals that were abstracted were provided by the university's Sidney Born Technical Library. The library also began offering, for a fee, full article copies of the items abstracted for the bulletin.

With these resources in place, the new Petroleum Abstracts (PA) service published Volume 1, Number 1 of the *Petroleum Abstracts Bulletin* on January 7, 1961. The bulletin has been published weekly ever since.

From the beginning, the service was under the full control of The University of Tulsa but it was fortunate to have the guidance and support of subscribing company information managers in the form an advisory committee. This committee helped design the service and provided advice on continuing development. The meetings of the committee were always useful, were often lively and helped this partnership be so effective.

The names of many of the members of the committee have been lost over the years, but the following attended the Interim Advisory Committee meeting in October, 1960:

T. W. Brinkley	Sunray Mid-Continent
G. H. Cloud	Jersey Production Research
A. W. Coulter	Dowell Division, Dow Chemical
Maryann Duggan	Socony Mobil
P. F. Hawley	Pan American
P. Knapp	Ohio Oil
R. Mayes	Continental Oil
J. J. O'Neil	Sinclair
S. Winn	Gulf

Guerrero's approach to the Director's job reflected his training and experience as a petroleum engineer. His marketing technique was simple and straight-forward: he used his industry contacts and he developed a list of oil company executives that he contacted by telephone. On one of those lists, as a point of interest, was Zapata Offshore Company, G. H. W. Bush, President. There is no record of Zapata ever subscribing.

While keeping the department functioning, Guerrero saw his primary task as a technical one. During his time as director, he focused on selecting the patents to be abstracted for the bulletin. But another challenge faced him.

The initial product mix consisted of the following:

- The weekly printed bulletin organized with four abstracts on each page;
- A set of abstract cards, one for each author listed in the abstracts;
- An annual list of abstract titles organized by a simple classification scheme.

From the beginning, this was recognized as being inadequate. The abstract bulletin represented the “current awareness” aspects of the bulletin but, other than a simple numeric indexing scheme, there was no effective way of retrospectively searching, by topic, for previously processed patents and articles. The need for a retrieval service was clear and work soon began on designing one.

Search Me

Developing a retrieval service was not a simple task. Technically, this was not to be a service but a set of products. With the technology of the day, searching was mainly done by computer programs that sequentially examined a file of abstracts stored on magnetic tape. The basis for searching was a set of key phrases, called *index terms*, that were to be applied to each abstract by PA professionals. The first job was to develop a set of index terms into a *controlled vocabulary* termed a *thesaurus*.

Thesaurus development was started by a committee of industry professionals supported by PA staff and continued throughout 1964. This was not a simple list of index terms. Each term had a set of relations connecting it with other terms that were designed to aid the indexing and searching processes. The thesaurus was, in effect, a common language that allowed the indexer to communicate with the searcher. Further, with additional development, it became, in effect, the technical taxonomy of the upstream petroleum industry.

The result of this effort was the First Edition of the *Exploration and Production Thesaurus* that debuted in January, 1965 and was the foundation for the other retrieval products. This was a major effort but there were a lot of other things needed in addition.

It was obvious that computer support was going to be required in the processing of assigned index terms and in generating the retrieval products. Early in the planning phase of the retrieval service, PA engaged a computer professional to aid in the design and development of the necessary software. This began what became a continuing series of computer-related crises. The earliest of these was a game Guerrero often played called “Where's Martha?”

The other tasks required to launch the new service included the design of products, the hiring and training of staff, both full-time and contract, the development of pricing and the marketing of the service. Some how, Guerrero was able to achieve all of this and the new retrieval service was introduced at the beginning of 1965.

Those products consisted of the following:

- The *Exploration and Production Thesaurus*
- A computer search tape (misnamed the *Master Record Tape (MRT)*)
- The *Alphabetic Subject Index* (a hard-copy classification index)
- The *Dual Dictionary* (a printed search tool)

Except for the thesaurus, the products were updated and re-issued on a 4-month cycle that continued for years to follow.

1965 saw another change when Dr. Donald P. Helander was appointed director to replace Guerrero who had become Dean following the death of Walker. Helander faced a series of challenges in keeping the abstract service going while introducing the new retrieval service.

Another challenge emerged sometime later. From the beginning of the retrieval service an effort had been made to maintain compatibility with the products supplied by the CAIS. For example, the *MRT* format was initially identical to their tape format. However a major incompatibility existed between the *Exploration and Production Thesaurus* and the CAIS thesaurus in the hierarchical arrangement of the terms. The two organizations worked together to correct this, the result being a facet oriented thesaurus that was introduced in 1967.

Helander's approach to directing the service was, to a large extent, the same as Guerrero's: the director's job was considered to be a technical one. Marketing and subscriber relations were considered to be necessary bothers. While no evidence exists, we suspect that, given the challenges he faced, Helander probably spent less time selecting patents than did Guerrero.

Helander also continued a practice that extended the value of the service to the College of Engineering. That was the use of graduate students to perform the indexing of articles. At least two PhD candidates in Petroleum Engineering who were engaged in this activity went on to have distinguished careers in the petroleum industry. The value of financial compensation was enhanced by the intellectual challenge of reading dozens of technical articles each week during their service.

One thing that increasingly occupied Helander was the update project. It was recognized that each year's search tapes were being indexed using thesauri that differed somewhat in terms and hierarchies. This was soon recognized as a growing problem that would make multi-year searches increasingly difficult to perform. After much urging by the subscribers, Helander agreed to the development of a stable thesaurus in 1969 and to start a project to update the earlier tapes to reflect hierarchy of that thesaurus. However, he left the execution of this plan to someone else

It's Management, Stupid

In early 1969, Dr. Harry O. McLeod was hired from industry to be Director of the Information Services Department, replacing Helander who returned to the Petroleum Engineering faculty. McLeod faced challenges as great as any that existed since the beginning of the service.

The first challenge was financial. In 1969, five major oil companies located in Tulsa merged to form three, a net loss of two subscribers to the service. This represented severe financial stress to PA. After numerous discussions with the subscribers, a cost reduction program was instituted in 1972 that significantly reduced printing costs. This was achieved by the following:

- Changing the bulletin format from a four abstract per page to a two-column, newspaper-type publication.
- Reducing the frequency of publication of the *Dual Dictionary* to one per year.
- Reducing the frequency of publication of the *Alphabetic Subject Index* to two per year.

Those actions helped to relieve the financial crisis. Of course, the international oil crisis of 1973 and the subsequent focus on petroleum supply helped even more.

The second challenge was a continuation of computer support problems. Since 1968, the department had used a contract computer service operated by University Computing Company that was based on a Univac 1108. In the spring of 1969, the university engaged a consulting company, Computer-Management Interlock, to manage its computer operations. After an extensive study, Interlock contracted with a Tulsa company, Data Research Corporation (DRC), to provide these services. Unfortunately, DRC used a CDC 6400 system. Right in the midst of intense efforts to complete the update project, PA faced the task of rewriting all of its programs to run on the 6400.

For several years, the department had depended on the part time efforts of Paul A. Buthod, a member of the Chemical Engineering department, for its computer development efforts. Buthod was assisted by two graduate students. In mid-1969, after a search that extended for several years, McLeod hired John A. Bailey (at a pittance, we might say) to manage the department's computing activities.

After an intense period of programming during the fall of 1969, the programs had been completed and work focused on completing the backlog of current processing and, finally, finishing the update project.

Unfortunately, in the Spring of 1970, the university was notified that DRC was going out of business and that it had sold its contracts and "assets" to Computer Knowledge Corporation (CKC) in San Antonio, Texas. While CKC used the same type of computer as DRC (CDC 6400), the process of operating a punch card based computer system located 500 miles from Tulsa promised to be a considerable challenge.

In late Spring of 1970, within a month of completing the update project, DRC closed. The following months proved that the remote arrangement with DRC was not going to work and the university began the process of obtaining its own computing system. This culminated in the fall of 1970 with the purchase and delivery of a Xerox Sigma 6 computer (yes, Xerox made computers; no, the Sigma 6 did not make copies.)

For the third time in three years, PA faced the task of rewriting its computer programs to work on a new machine. Once again, after a great deal of intensive effort the programs were completed and, after much more intensive effort, the backlog of processing was worked down. The update project had been completed earlier, requiring one of the graduate students to travel to San Antonio.

A brief digression is perhaps in order to discuss computing at this time. The state of the art was relatively crude and the ISD system was typical of the times, punch card based. Indexers entered their terms on forms that were submitted to the keypunch service operated by the university. In addition, updates to the thesaurus were coded on forms that were processed by the keypunchers. At the end of each four-month period, the thesaurus tape was updated in a batch process and then a series of batch runs matching the index terms were made, resulting in an MRT. The same cards were used at the appropriate times to generate the other products. The MRT was shipped on "IBM compatible", ½ inch magnetic tape which was also the media for archival data storage.

This process required a great deal of labor, error checking and work redo. As a result, it was not unusual for the products to be late in shipping. This was frequently a subject of discussion at advisory committee meetings.

As far as bulletin production was concerned, no computers were involved. Following a series of editing steps, the final bulletin copy was produced by one typist using an IBM Executive typewriter. The process was error-prone, labor intensive and, unfortunately, did not capture the bulletin text in an electronic form.

In addition to dealing with computer and financial problems, McCleod struggled with the need to mount a marketing campaign. A marketing manager was hired who did not work out. Finally, in spite of skepticism on the part of a number of people regarding the usefulness of professional meeting exhibits, the service had an exhibit at the 1973 Offshore Technology Conference.

Reflecting the financial status at the time, this exhibit was done on the cheap. Bailey hauled the exhibit materials to Houston in the back of his pickup truck. The PA booth was located in an air-supported structure (bubble building) that had inadequate air-conditioning and was in a booth located next to that of a company exhibiting a machine that made some of the most irritating noises known to man.

This was followed in the fall of that year with an exhibit at the 1973 Society of Petroleum Engineers Annual Conference. While this exhibit was done a little more professionally, Bailey once again hauled the exhibit material to the conference, this time in Las Vegas. This established a pattern of exhibits that continued uninterrupted for eight more years and funds were found to retire the “pickup express.”

Another area in which McLeod was able to make an important contribution was that of new products. The first was the *Geographic Thesaurus*. This contained a set of index terms, structured in the same way as the *E&P Thesaurus*, identifying concepts such as political divisions, named geographic features and oil and gas fields. The first edition of this publication was released in 1973. The same year, the first *Key Word Out of Context to the E&P Thesaurus (KWOC)* was published. This product, first suggested by a subscriber member of the advisory committee, provided an improved way of locating terms from the thesaurus. These two publications continue to be a part of the ISD product mix.

McLeod further saw that the service was not just in the petroleum industry but was also, perhaps primarily, in the information industry. Early in his tenure as director, the service became a member of the National Federation of Abstracting and Indexing Societies (NFAIS). NFAIS is a trade organization that represented organizations that provided scientific, technical and medical information services, mainly on a not-for-profit basis. This membership provided contact with the information industry and an occasional marketing opportunity.

Perhaps McLeod's most important contributions to the service were the recognition of the importance of marketing and the understanding as to the real nature of the Director's job. Previous directors saw the job as being primarily technical with some supervisory tasks and periodic interactions with subscribers. McLeod saw that the job was primarily a management job, requiring a completely different set of skills from its incumbent. That concept was to slowly change the culture of the organization.

At any rate, in early 1975, Harry McLeod announced that he was leaving to accept a position in industry. That year was to see a new director and a new set of crises of opportunities.

Computerize Everything

In June, 1975, John A. Bailey was appointed the director of the service. It was understood by many that appointing the head computer guy director would result in a major effort to computerize many of the service's activities. However, before that could begin, Bailey was faced with a major crisis.

Until this time, subscribers used the MRT to do retrospective searches. This was a relatively crude process that involved scanning the entire tape for records that matched a search expression formed from the index terms. To complete a comprehensive search,

each tape in the collection had to be scanned. By now, those tapes numbered more than 30. Advances in technology had rendered this process obsolete. In particular, direct access (disk) storage and computer time-sharing held promise for improved searching.

A number of subscribers were investigating options for improving their searching activities. One of these was a software package named INQUIRE that was based on formatting the contents of the MRTs to disk. The search process, however, was still a batch activity with the search expressions entered on punch cards.

The real promise for improved searching lay with a development that arose almost simultaneously from two companies: The ORBIT Service offered by System Development Corporation and the DIALOG Service provided by Lockheed Space and Missiles. Both companies had developed their systems during the late 1960s and early 1970s under government contracts and began actively offering them commercially in 1973. These services were made possible by developments in the technology of computer direct access storage and timesharing systems supported by a nationwide communications network.

A number of subscribers were anxious for PA to have a presence on one of these systems and they were biased toward the ORBIT system. This was stated fairly strongly at the Advisory Committee meeting in May, 1974. Following that meeting, Bailey started negotiations with Carlos Cuadra, the ORBIT Service manager, with limited results. The sticking point was that PA required that the search file be limited to its subscribers. Cuadra, seeing this as an unacceptable limit on potential revenue, would not commit to a contract that included this provision.

The issue came to a head at the Advisory Committee meeting in Mexico City in May, 1975. This meeting probably set a standard for contentiousness that has never been matched. While there was no physical injuries sustained, emotional damages were extensive.

The deal with ORBIT that was subsequently negotiated included provisions that, effectively, caused the university to bear the financial risk for the project. On October 1, 1975, the TULSA file became active on the ORBIT Service.

As the years progressed, additional computer projects were indeed undertaken. The thesauri programs were re-programmed to make use of disk storage on the Sigma 6. In 1977, a project was started to computerize the bulletin entry and printing activities. This system was implemented in January, 1978, running on two Altair microcomputers allowing, for the first time, the abstracts to be captured in electronic form. In 1979, supported by a contract with the United States Department of Energy for computerizing a number of earlier abstracts, the division was able to obtain its own computer, a Honeywell Level 6 minicomputer. These latter two developments were to be central to a major crisis that was to develop a couple of years later.

Computerization was not the only thing that Bailey focused on. With the increase in oil prices during that period and the worldwide concern about supply, the number of subscribers sharply increased and, for the first time in its history, the division was not in financial difficulty. Bailey discovered that 40% of the service's revenue was coming from companies outside of the United States. This indicated that increased attention should be given to foreign subscribers.

From 1976 through 1979, ISD staff traveled to Europe, South America, Canada and the Middle East to offer training programs on the service's products and to visit subscribers. This paid off in several cases where either new subscribers were acquired or existing subscribers added additional products.

One of those trips provided this author with one of the more memorable experiences of his life. Along with Sam Martinez and his wife, we were in Paris to do a training program. Martinez was known for his careful expenditure of funds and on our first night in Paris he insisted we have dinner at a restaurant he had found in a tour guide. Cafe Miguel advertised a three-course dinner for 40 Francs (about 80 cents with the exchange rate at the time.)

After wandering for a while, we finally found the establishment down a rather dark alley. And, did indeed have a three-course dinner consisting of a watery soup, a stew made from some unidentified meat and a plate of cheese and rather old apple slices. This was accompanied, of course, by a bottle of wine. As we were savoring our dessert, this author noted that the place reminded him of a scene from a cheap spy movie. We quickly departed for Pigalle.

Toward the late 1970s, a major crisis developed that we call "The Troubles." While the exact cause is difficult to pinpoint, the confluence of several events was certainly involved. First, during the last half of 1979, the amount of selected material increased dramatically, achieving an increment of 20 to 25 percent of historical volume. Additionally, in late 1979 and 1980 PA's entire programming staff (one) accepted jobs elsewhere.

In the absence of the original programmer, the microcomputer bulletin system showed signs that PA had probably pushed the technology envelop a bit too much. The system was routinely losing files, resulting in a great deal of re-work. At the same time, the university's central computing system (the Sigma 6), had begun exhibiting capacity problems, making it difficult to get the retrieval products out the door on a timely basis. Finally, one of the service's more productive indexers had died.

For whatever the reasons were, by mid-1980 an inventory (i.e., backlog) of some 10,000 unpublished abstracts had developed and the subscribers were not amused. Dramatic action was clearly needed.

The first step was the re-implementation of the bulletin system on the Honeywell system acquired earlier. For the third time, PA's computer programs had to be completely re-

written. With the new programs in place in the summer of 1980, the effort began to work down the inventory while still keeping up with the current material. At the request of the subscribers, PA began publishing an extra bulletin each week that contained the older abstracts. This effort was completed in April, 1981.

In the summer of 1980, Bailey stepped down to focus on the still existing computer problems and Dr. Roy W. Graves became interim director. Graves had been the fourth person hired by Guerrero and at the time was Geosciences Editor.

Graves faced several challenges. He had to work down the backlog and support the effort to get the retrieval products back on schedule. Early in his tenure, two managers who considered themselves to be key to the operation resigned. Then, in 1981, the university assigned PA office space in Harwell Hall on its main campus. Graves had to plan, organize and execute a massive move of the operation from its original location at North Campus to Harwell.

To accomplish these actions, he took a rather Spartan approach to things. He canceled all marketing efforts and ended the membership in NFAIS. He did hire a new supervisor for the bulletin production effort and a programmer to assist Bailey. This approach probably reflected his background as a Colonel in the United States Army Air Corps in World War II and as an exploration geologist for several years following.

Graves did introduce one new product, the *Descriptor Frequency List* in 1981. In addition, a new system was implemented that year for processing index terms. This system was an on-line keyboard system that was hosted on the Honeywell system. This eliminated the dependence on punch cards and problems with the university's central computer support. Also in 1981, the abstracts that were being captured were loaded on the TULSA file at ORBIT.

At the end of 1982, with the backlog eliminated, with several new computer systems, independent of the university's computer system, in place and with a relatively new home for PA, Graves retired. Once again, the service was to face a new director and, this time, a new era.

A Gentleman and a Scholar

On January 3, 1983, Dr. John G. L. Dowgray, Jr. became PA's fifth director. Dowgray had joined the university in 1969 as Vice President for Academic Affairs and, later, was appointed its first Provost. Late in 1982, the university's President, Dr. J. Paschal Twyman, asked him to take over the abstract service.

Dowgray spent most of his first half-year at the service talking and, most importantly, listening. As a student of history and a long-time administrator, he had developed a finely tuned ability for judging people and situations.

What he found was a dedicated staff of professionals and support people that were doing a good job. He also found a need for upgrading the computer effort, a need for a better organizational structure and a need for an improved marketing effort. Most of his time at PA was spent fulfilling these needs.

At the beginning of 1983, the service was still using the Honeywell computer that had been purchased for the DOE project and had been pressed into service to solve the processing problems of 1980-1981. While this system worked well, it was relatively slow and was beginning to show its age. In 1984, Dowgray approved the purchase of a Honeywell DPS 6 system that represented a several-fold increase in processing capability. Over the next several years, a number of computer upgrades were instituted. Also, in 1985, the service began converting its programs to run under the more standard UNIX operating system. This was the fourth time those programs were re-written.

Utilizing this increased computing capability, the service implemented its own searching software, Pecos, in 1986. This made it possible for PA staff as well as others on campus to have access to a portion of the abstract file. Pecos, having gone through several iterations of design, machine support and file content, is still in active use.

Also in 1986, PA implemented its on-line indexing system. Up to this point, the indexers were still entering their terms on a paper form that was then transcribed to disk in a batch operation. The new system allowed indexers to enter terms using a terminal with the terms being verified against the thesaurus as they were entered. This provided a significant increase in productivity.

In the organizational arena, Dowgray saw a need for a manager of the editorial staff. At the time, the abstracters and indexers were organized in two groups, engineering and exploration. In 1987, he hired a manager for these two groups as Assistant Director.

Early in his tenure, Dowgray saw the need for an active marketing effort. While the service had had a marketing representative in the late 1970s, that person was relatively ineffective and had left in 1980. In 1983, a marketing manager was engaged. She began the development of marketing materials, including a logo, and initiated an active conference exhibition program.

That was good timing. The petroleum industry, which had been riding a major boom in the early 1980s, saw its fortunes reversed. A precipitous drop in crude oil prices had caused the companies to initiate cost reduction routines including layoffs. During the pursuing years, some 500,000 people in the petroleum industry were let go. A slogan seen frequently at the 1984 AAPG Conference fairly sums up the attitude of the time: "Stayin' Alive 'til '85." Unfortunately, things did not get much better for several years.

Another trend added to the marketing challenges the service faced. Due to the oil price decline and other factors, several major oil companies merged, a trend that continues.

While the PA marketing effort may not have sold any new subscriptions, its visibility probably aided its stability during this difficult period.

During Dowgray's years at PA, two new products were initiated. One was an abridged search file on the DIALOG system. Since 1975, the service's file had been available exclusively on the ORBIT service. Pressure from several subscribers to have a presence on DIALOG caused Dowgray to negotiate an agreement with DIALOG to spin the search file, without abstracts, on that service beginning in 1989.

The second product involved what was probably one of the strangest series of events in the service's history. For several years, Digital Equipment Corporation (DEC) had been marketing a number of CD-ROMS contain search files representing a variety of technical disciplines. A DEC representative contacted PA in late 1985 to begin negotiations for developing a CD-ROM containing the exploration portion of the file. After executing an agreement and after a number of months of file design the product was introduced at the 1986 Special Libraries Association Conference in Boston. The following week the product was introduced at the AAPG National Conference in Atlanta.

Two weeks after the Atlanta meeting, a DEC representative called and informed PA that since they felt that they were "behind the marketing curve." they were discontinuing their CD-ROM sales. The Exploration CD-ROM had what was probably the shortest product life in recent times.

During his first year at PA, Dowgray re-instituted its membership with NFAIS and began an active association with that organization. Ever since its beginning, everyone associated with the service assumed it was in the petroleum industry. As Dowgray observed the challenges and changes faced by the other members of NFAIS, he came to a completely different conclusion. This is reflected in the following text taken from his report to President Paschal Twyman dated November 19, 1986:

“.. However, I quickly discovered that Petroleum Abstracts and its corollary database, TULSA, rather than an interesting academic service was an important factor in the “Information Industry”, and we were really engaged in running a publishing house whose future and whose long-run success depended on how effectively it participated in that industry and met its challenges. I also discovered that the Information Industry was in a stage of tumultuous change and there were few guidelines and no manuals for success. ..”

This insight help to set the standards for recruiting a new director. In October, 1991, John Dowgray retired from the university after 22 years of service.

Ring a Bell

In October, 1991, after an extensive nationwide search, Rafael E. Ubico was appointed Director of Petroleum Abstracts. Ubico had spent most of his career at Control Data

Corporation and had most recently been associated with a company that marketed patent disclosures on CD-ROM. This background in computers and the information industry equipped him well for this challenging job.

Times were still not great for the petroleum industry. The conventional wisdom held that a crude oil price of \$15 per barrel was necessary for the long term survival of an oil company. A number of times during this period, that price dropped to around \$10. Mergers and rumors of mergers were a common topic of conversation at PA.

This environment coupled with the university administration's desire to expand the revenue from the service caused Ubico to put a great deal of effort into looking for new products and, even, new technical areas to expand into. He also began an initiative to increase the ratio of service income to subscription income.

Service income included revenue from the ORBIT service, from Petroleum Abstracts Document Delivery service (PADDS) which had earlier become a part of PA and from a custom searching service known as PASS. PA had been almost totally dependent on subscriptions for most of its history. This had the disadvantage that when two subscribers merged the resulting revenue from the resulting firm was almost half of that from the two merging companies. This made planning, and even survival, difficult. Ubico worked to improve ORBIT income by increasing the university's share of revenue. He also strove to identify and implement new products that would be made available to anyone interested, not just subscribing companies.

The first new product introduced was an environmental file, EARTH, on the ORBIT service in 1992. This was followed, that same year, by a major project, the Horizontal Well Information Service (HWTIS). This was a joint effort with the Horizontal Well Technology Center at Harriot Watt University in Edinburg, Scotland to develop a series of products covering the technology of (of course) horizontal wells.

In 1993, PA introduced its second CD-ROM product in conjunction with DIALOG. This product included the most recent 10 years of abstracts with a limited number of index terms on each item.

By 1995, the World Wide Web had begun its growth as the world's "hottest" new technology. Early that year, PA established its first Web page. While not an "e-commerce" facility, this Web page served to provide information about the service to subscribers and non-subscribers alike. This was followed that year by the introduction of the bulletin in electronic form. First by the use of special software and then by e-mail, the bulletin was delivered to subscribers who elected to receive in that form.

1996 began with a series of developments in the on-line service arena. Since 1975, the TULSA file had been offered exclusively through the ORBIT organization. For several years, the subscribers had been urging PA to provide alternatives. Finally, at the beginning of 1996, an agreement had been concluded and the file was offered by

DIALOG. That was followed that same year by bringing the file up on STN, a service that had been founded several years earlier by The Chemical Abstracts Service.

During the 1990s, changes in the petroleum industry were paralleled by numerous changes in the information industry (“paradigm shift” was a commonly heard phrase). One important consequence of this was consolidation with a number of for-profit and not-for-profit organizations being absorbed. By 1998, the API CAIS had been purchased by a commercial firm and its technical work had been transferred overseas. That year, several companies evaluated PA as a purchase opportunity. None was able to develop an adequate offer.

While dealing with a decreasing number of subscribers, attempting to increase service income and looking for new products and markets, Ubico also made important contributions to the culture of the service. One of these was a concentration on quality. At the time, quality service initiatives were being followed by a great number of organizations in the United States, including The University of Tulsa. PA engaged in a number of activities in this arena. While the quality of its products were increased only marginally, they were already very good, these activities did serve to make the staff more aware of the importance of this issue.

Another culture improvement that Ubico made was to staff communications. He started a series of periodic management and staff meetings that helped each person feel that they were a stakeholder in the operation and could influence decisions about where the service was going.

In May of 2000, with the TULSA file offered by three online services, with the PA heading in the direction of total electronic distribution, with a number new products in the mix and with the staff communicating better, Rafael Ubico elected to retire. The university began a search for a director to lead Petroleum Abstracts into the new century.

Epilogue

We choose to end this story here. It only seems logical that with 40 years behind behind the service, with a new century approaching and with a new director in the offing, the written history of the Petroleum Abstracts service should pause. Round numbers are a wonderful thing.

We began by terming this endeavor an uncommon partnership. And a profitable partnership it has been. The subscribing companies have benefited from the information provided to them, now represented by close to 800,000 abstracts. The university has benefited from the revenue received over the years and, most importantly, from the world-wide exposure it has received. Benefiting, also, over the years were a number of students who received both financial support and real-world experience from their service at PA. This latter benefit may have been the most important of all.

The story also reflects the “hills and valleys” of the petroleum industry. Founded during an awful time for the oil companies, it has survived the innate booms and the busts of that industry.

As stated at the beginning, we have tried to indicate how the nature of an organization changes to reflect the people who lead it. For the most part, the “chapters” of this history are organized around the six directors and how the culture of the current organization reflects the characteristics of those six men.

In reading the final draft of this history, it occurs to us that, in certain ways, the culture of the organization has remained constant. The number one job has always been to “get the bulletin out.” Due to a dedicated and hard working staff, the bulletin has always gotten out. The service has had its ups and down but, on the whole, we think it has always been pretty good.

Acknowledgments

We would like to thank the directors who have led this service through its history. Their hard work, dedication and creativity kept PA viable and helped it be an important factor in the petroleum industry and an important contributor to the university. Our gratitude also extends to the collection of folks who comprised the service's staff over the years, a collection that was once referred to as “wonderfully diverse.” All of these people have made our life for many years challenging, interesting and often fun but never, ever boring.

We also express our appreciation to Dr. Ben Henneke for making us aware of information regarding the founding of the service that was contained in his unpublished memoir, “An Appreciative Time.” This was very helpful for its insight and, in fact, provided us with the perfect title for this history.

Appendix

Petroleum Abstracts Timeline 1961-2000

Petroleum Abstracts
Bulletin

Abstract Cards
Document Delivery

E&P Thesaurus
Master Record Tape
ASI
Dual Dictionary

TU's First
Computer
(Sigma 6)



E. T. Guerrero



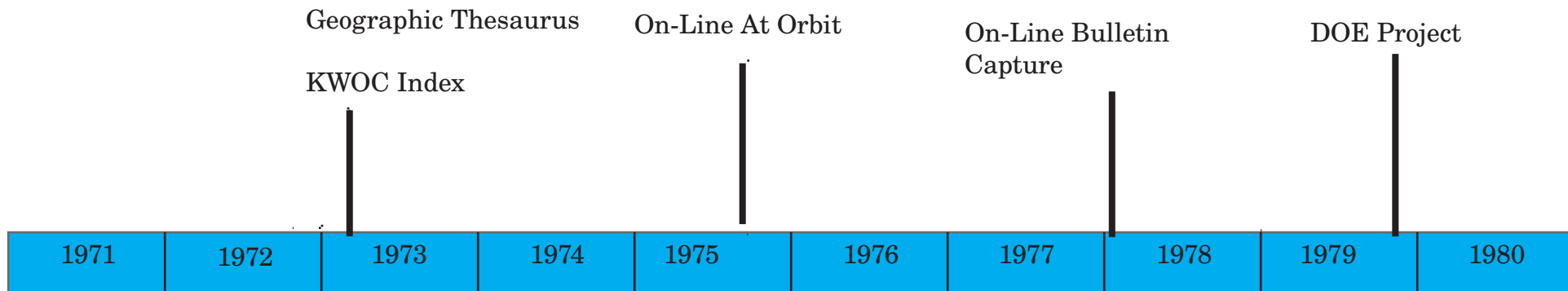
Don Helander



Harry McLeod

Petroleum Abstracts Timeline

1961-1970



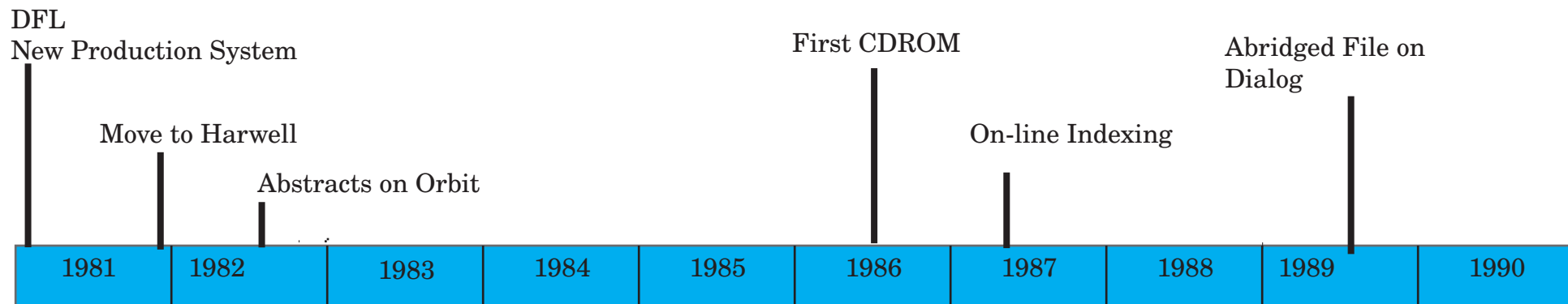
John Bailey



Roy Graves

Petroleum Abstracts Timeline

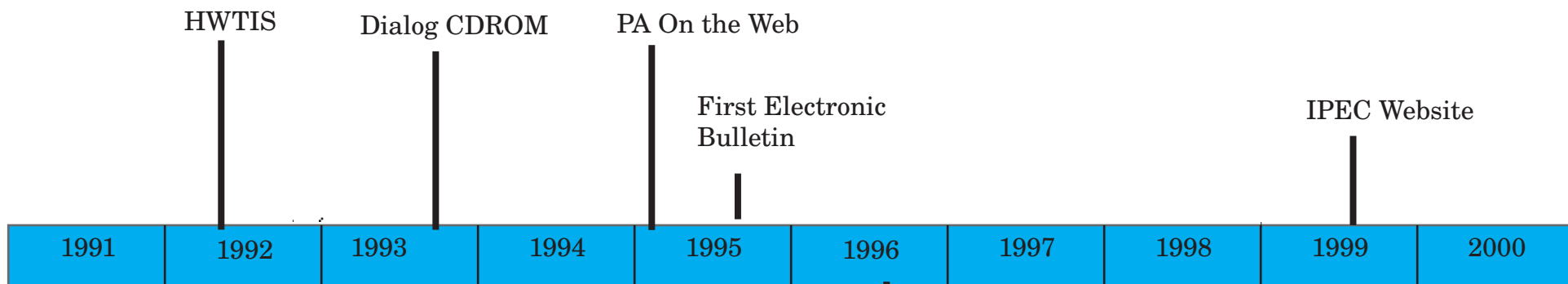
1971-1980



John Dowgray

Petroleum Abstracts Timeline

1981-1990



Ralph Ubico

Petroleum Abstracts Timeline

1991-2000