ORIGINAL FILE

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of Parts 2 and 22 of the	)	
Commission's Rules to Establish an	)	ET Docket No. 92-100
Enhanced Narrowband Data and	)	
Paging Service in the 930-931 MHz	)	
Range	)	

To the Commission:

DEMONSTRATION OF TECHNICAL FEASIBILITY AND REQUEST FOR PIONEER'S PREFERENCE

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June 1, 1992

SUMMARY

Global Enhanced Messaging Venture hereby submits its showing of technical feasibility in support of an allocation of channels in the 930-931 MHz paging reserve band for provision of an enhanced narrowband data and paging service. Award of a pioneer's preference is sought in view of the substantial technological and service innovations which would arise from the proposal.

The proponent proposes the allocation of three channels for a nationwide paging service and three channels for a regional paging service using the new technology and enhanced service. The proposed new paging format will combine a data transmission speed in excess of 6,000 bits per second with the use of new techniques to increase the efficiency at which alphanumeric data is delivered to remote receivers. The new allocations will be used for the provision of service through new paging receiver devices which provide a means for a subscriber to respond to incoming messages via the landline telephone network. Because this two-way communications device is wireless in one direction, it is of a lower cost and has a lower power consumption than a two-way wireless device. This type of receiver off-loads high bandwidth communications requirements to the landline network, thereby reducing spectrum requirements from those of other two-way services.

A second type of receiving device which will be used in the allocation is capable of receiving and displaying facsimile messages transmitted over the network. This receiver

will be capable of receiving urgent facsimile messages containing graphical and textual information over the air, and will be capable of receiving alphanumeric messages indicating that a non-urgent fax message has been placed in an electronic fax mailbox. The receiver will then be able to utilize the landline network to retrieve the non-urgent fax message.

Here are the salient features of the new paging format, service, and receiver:

- High speed paging with patent pending data compression capabilities which optimize the performance of alphanumeric paging
- Capability of receiving tone-only, numeric, alphanumeric, and binary data
- Utilization of a specialized low-cost, two-way, hand-held message communication device which combines radio reception with land-line communications capabilities
- Utilization of a set of channels exclusively devoted to high speed paging, which will not be hampered by slower, less spectrum efficient techniques
- Products and techniques which will eventually be applicable to other frequency ranges where slower, less spectrum efficient pagers will be able to be replaced with new receivers, thereby increasing the loading of subscribers on existing channels
- Primary utilization of spectrum for efficient alerting purposes and for sending textual messages with a greater efficiency than currently achieved in paging
- Primary utilization of the land-line network for sending responses and receiving messages which would use an excessive amount of air time because of the large volume of data.
- Utilization of a specialized hand-held receiver which is capable of receiving and displaying over-the-air facsimile messages.

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Global Enhanced Messaging Venture (the "Joint Venture"), a joint venture of Message Center Beepers, Inc. (Message Center) and RTS Electronics, Inc. (RTS), by its attorneys, hereby submits its showing of technical feasibility with respect to a proposal for allocation of channels in the 930-931 MHz paging reserve band for provision of an enhanced narrowband data and paging service. As shown below, the proposed allocation would permit the introduction of substantial technological and service innovations to the nation's paging industry. Award of a pioneer's preference with respect to the proposed allocation is therefore requested in order to permit the proponent to provide its unique services on a commercial basis, further develop its concepts in operation, and enjoy the rewards of its innovative concepts.[1/] The proposal is within the ambit of the Petition for Rulemaking (RM-7617) filed by

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1/ This proposal is submitted pursuant to the public notice of April 30, 1992 entitled "Deadline to File Pioneer's Requests/ 900 MHz Narrowband Data and Paging/(ET Docket No. 92-100), mimeo 22922.

Telocator on January 23, 1991 requesting the allocation of the 930-931 MHz band for an advanced messaging service ("AMS"). The Joint Venture therefore is not filing a separate petition for rule making, pursuant to the procedures established on reconsideration in the Memorandum Opinion and Order in GEN Docket No. 90-217, 7 FCC Rcd 1808, 1811 (at para. 19) (1992) and set forth in Section 1.402 of the rules.

I. Introduction

A. Synopsis of the proposed innovations and services

1. Technical innovations. The Joint Venture proposes the introduction of Global Enhanced Messaging (GEM), which will utilize a unique radio paging transmission format. The GEM format will support a data transmission speed in excess of 6,250 bits per second, considerably faster than the 2,400 bit per second maximum currently in commercial service. That speed improvement will be further enhanced through techniques which reduce the amount of information which must be transmitted in order to send certain types of paging data.

2. These improved transmission techniques may be utilized by a set of new paging receivers which provide two-way message communication capabilities, not available on any paging receiver in use today. The basic receiver will be in use on conventional systems by the end of this year, but solely as a data entry device, with no two-way capability. A proprietary alphatone paging format will be incorporated into the initial

units. A variation of that format will be used for RF transmissions to provide the wireless portion of the GEM service. GEM partner RTS holds the proprietary rights to the design of those receivers. It will make them available for use by the Joint Venture and will also make them available, on a nondiscriminatory basis, through license arrangements to other companies which wish to provide GEM services.

3. The net result of these technological innovations is a substantial increase in the subscriber capacity of a 25 kHz radio paging channel. The number of alphanumeric subscribers accommodated on a channel could be thirty percent greater than would be achievable by merely increasing the speed at which alphanumeric pages are transmitted.

4. Some of these technological advances could, after development at 900 MHz, be readily adapted for use in other frequency bands, where they will be capable of increasing the capacity and expanding the service capabilities of channels already devoted to paging. These techniques thus promise the eventual widespread conservation of paging spectrum, permitting the provision of additional service without the allocation of new frequencies.

5. Service innovations. GEM utilizes innovative techniques which facilitate a number of advanced services. It will support a two-way, hand-held message communications unit which comprises a wireless receiver and a landline transmitting

device. The unit permits efficient receipt of alphanumeric paging information along with the capability to send responses to the caller via the landline network. Providing communications in this manner reduces the over-the-air bandwidth requirements for a two-way service by moving a portion of the transmission to the landline network. This hybrid two-way service fits a number of communications needs and utilizes a lower-cost paging receiver than can be used in a two-way wireless system. A GEM system will also, however, support traditional paging receivers which can receive tone-only, numeric, and alphanumeric pages. GEM will also support the transmission of binary data for reception by laptop, palmtop and other portable computing devices.

6. GEM provides the ability to receive and examine on a hand-held paging receiver high-priority facsimile messages containing graphical and textual data. It also provides the ability to receive and examine lower priority facsimile messages via retrieval over the landline network, thereby conserving valuable bandwidth.

B. Description of the proponent

7. The Joint Venture is owned one-half by Message Center Beepers, Inc. and one-half by RTS Electronics, Inc. They bring to this proposal many decades of experience in the paging industry.

8. RTS is controlled by Real Time Strategies, Inc. (Real Time), with a minority interest held by Message Center. Real Time is based on Long Island, New York. The principals of Real Time are Jay Moskowitz, its president, and Spencer Kravitz, its executive vice president, both of whom are providing technical counsel to the Joint Venture.

9. Mr. Moskowitz has twenty-four years of experience in the design and management of software intensive real time systems. Prior to forming his current company he served for more than five years as Senior Vice President of Engineering for a manufacturer of large scale telecommunication systems. During his career Mr. Moskowitz has developed telecommunication, minicomputer, and microcomputer based systems for a number of major companies. He has served also as a Senior Design Engineer and Director of Product Development for a major radio common carrier. He developed and marketed a real-time stock market quotation system which is in common use. Mr. Moskowitz serves as Chairman of the Telocator Network Paging Protocol Committee, Chairman of the Telocator Alphanumeric Paging Committee, and Chairman of the Telocator Data Protocol Committee. Additional information concerning Mr. Moskowitz' credentials and background is included in an abstract and resume attached hereto. Mr. Moskowitz has coordinated the preparation of the technical information included in this document.

10. Mr. Kravitz served for five years as department manager and Assistant Vice President of Software Development for a telecommunications systems manufacturer. He has developed radio paging, voice mail, and networking products. Additional information concerning his credentials and background is included in an abstract attached hereto.

11. Message Center is a private carrier paging company licensed under Part 90, which, together with an affiliated radio common carrier serves over 80,000 pagers throughout much of the eastern half of the country. Message Center is owned by members of the Zachs family of Hartford, Connecticut and is believed to be one of the largest privately held carriers in the country. Henry M. Zachs is the president and Eric Zachs is vice president. Henry Zachs has been in the mobile communications business since 1961. He has various other radio common carrier interests throughout the country. While no showing of financial qualifications is required of proponents of pioneer's preference allocations requests, it should be noted that Message Center is a financially strong company which has financed tremendous growth internally. It is ready, willing, and able to handle financing of the Joint Venture's pioneering GEM system.

II. <u>The need for improved alphanumeric capabilities</u>

12. In the United States, alphanumeric paging is a sleeping giant. The total U.S. pager market is about 10

million subscribers, constituting 3.75% penetration. Alphanumeric paging constitutes only about 5% of that figure. Other countries have much higher rates. In Canada, for example, with a total pager penetration rate of about 2.25%, alphanumeric paging represents about 25% of the total and is growing. Other countries have even greater alphanumeric pager penetration.

13. Appended hereto as Attachment 1 are charts showing current and projected worldwide pager use; projected U.S. pager market growth with GEM's projected market share; and the anticipated growth of alphanumeric penetration. Examination of those charts indicates that alphanumeric paging will for a time constitute each year an additional 1%, and then 2%, of the overall paging mix.

14. The extent of the use of Touch-Tone telephone service has actually been one of the largest obstacles in achieving a greater level of alphanumeric paging market penetration. The wide availability of Touch-Tone telephones makes numeric paging an easy service to use and to market inasmuch as there are tens of millions of readily available input devices. Also, because radio common carriers can provide a totally automated numeric service, without the use of operators, it is a low-cost service to provide.

15. Alphanumeric paging, though, offers a substantial benefit to subscribers. Over the course of a year, the capability of alphanumeric paging to provide instant over-the-

air electronic mail will save a subscriber from tens to hundreds of hours of time when compared to numeric-only paging. In numeric paging, when a subscriber is alerted, he or she must locate a telephone in order to return the call. If the subscriber is on a highway without a cellular phone or otherwise not close to a telephone, he or she must attempt to locate a telephone as soon as possible. Since few radio paging services actually offer the calling party the ability to distinguish an urgent message from a non-urgent one, the paging subscriber has no way of knowing if the page is an emergency, routine, or unimportant call.

16. In some areas, a page recipient may stop at several pay telephones before finding one in working condition. Once the recipient locates a telephone, several other obstacles often get in the way. The subscriber may not have coins available to return the call. After placing the call, the subscriber often finds that the telephone number is busy, and might have to try several times, over an extended period, before getting through. In many cases a business switchboard number is shown on the pager without an extension number, and the subscriber finds that the caller never informed the switchboard that someone has been paged. Even if the business is small enough so that the switchboard operator can poll possible callers, several more minutes are spent waiting.

17. Each step in this extended return call process takes time. If, for example, it takes an average of 15 minutes for a paging subscriber to respond to each radio page alert, with a typical alert rate of 2.5 pages per weekday (which has long been an industry design standard), a numeric paging subscriber will spend 14 hours per month returning calls. Moreover, the paging party may have to physically wait at the telephone number sent to the pager solely to await the return call. Considering the number of people using numeric pagers and typical labor rates, it is clear that hundreds of millions of dollars in labor costs are related to the use of numeric paging.

18. Alphanumeric paging eliminates wasted time because it instantly conveys message content to the page recipient. The recipient may not need to respond to the paging party. If a response is required, the recipient may immediately determine the degree of urgency of the call and the appropriate response time. If the radio page instructs a repair person to make a service call, the nature of the problem and a list of required parts may be incorporated in the message, thereby facilitating the service call.

19. Alphanumeric paging holds the promise of an enormous time savings and concomitant increase in productivity. Yet the penetration of this service in the U.S. has not come close to its potential. The single most significant factor

which has hampered the growth of alphanumeric paging in this country has been the degree of difficulty in entering a message into a radio paging terminal via the telephone network. By comparison, in France MiniTel terminals which permit entry of alphanumeric paging messages have been widely distributed throughout the country by the Postal Telephone and Telegraph office. These devices, distributed originally so that telephone directories would be available online, have built-in displays and alphanumeric keyboards. More than five years ago, these terminals were interconnected by TeleDiffusion de France Radio Services through its nationwide paging network so that MiniTel callers may instantly transmit alphanumeric information to pager users. The United States does not have such a network of input devices, and a caller must find other means of routing an alphanumeric message into a paging system. The easiest way to enter an alphanumeric page with the current state of technology is by calling into a radio paging network which provides an operator assisted message entry service. This has brought the paging industry back to the days when telephone answering services were in much more widespread use. The caller contacts an operator at a telephone answering service. The operator then transcribes a message to a computer terminal which is interconnected to a radio paging network.

20. Although a live transcription service is an easy mechanism for a caller to get messages to the subscriber,

providing such a service is extremely labor intensive. The service must be staffed 24 hours a day, 7 days a week. The carrier must deal with the standard employment issues of staff turn-over, scheduling, benefits, and emergency staffing problems. It must provide a multi-terminal input network, maintain and service the input equipment, rent office space, hire supervisors, continually train new staff, handle customer complaints, and deal with the myriad of other problems associated with the running of labor intensive services. Running an operator intensive service is consequently very expensive, and the cost of providing alphanumeric paging to the end user is therefore very high in relationship to numeric paging. In addition, while such a service is easy to use for the subscriber, it raises issues of privacy, operator error, and on-line delays during busy periods.

21. Because of the substantial drawbacks to operation of an operator alphanumeric radio dispatch service, most carriers have chosen to defer offering such service until there is a better way to input alphanumeric pages. There are several emerging methodologies which are being employed in the U.S. to route alphanumeric messages into paging networks. Many programs designed for personal computers, and some for mainframes, are capable of forwarding alphanumeric messages into a paging terminal. In addition, there are some dedicated desk-top input devices which are specially designed to provide a means to

input alphanumeric messages. Unfortunately, these units are expensive and are dedicated to a single location.

III. GEM Service and the Pagentry Receivers

22. GEM offers an elegant solution to the alphanumeric page entry dilemma. Some of the benefits of GEM are derived by utilizing one of two categories of specialized hand-held receiving devices known as Pagentry^{tm} receivers.[2/] These receivers are an extension of a product which has been in development by RTS for over a year. Hundreds of thousands of dollars have been invested in the development of the proprietary Pagentry hand-held message entry device. Pagentry combines many common functions, along with its advanced telecommunication capabilities, into a single, feature-rich, battery operated, 3 inch by 5 inch by 3/4 inch, 5.0 ounce package. Pagentry looks like a hand-held calculator which has a display and an alphanumeric keyboard. A Pagentry user may store hundreds of names, addresses, telephone numbers, and pager identifier numbers, paging terminal telephone data, and other information into the unit. That information is permanently stored in memory backed up by a battery. At any time a user may enter and save in the unit one or more textual messages which will eventually be sent to a radio paging terminal for forwarding to an alphanumeric pager. At some later time, the

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2/ RTS has applied for a U.S. patent on the proprietary Pagentry technology.

device may be connected to the landline telephone network via a modular RJ-11 jack. In the case of a pay telephone, Pagentry may be acoustically coupled to provide the same communication capabilities. Once connected to the landline system, Pagentry executes a digital communications protocol in order to securely send its page requests to the paging terminal for forwarding to the alphanumeric pager. Detailed information concerning the Pagentry device is appended hereto as Attachment 2.

23. The Pagentry Model 100 and Model 200 will have all of the capabilities discussed above, as well as innovative radio receiving capabilities. Pagentry Receiver Model 100 has the capability of:

- sending textual responses over the landline network via electronic mail techniques directly to a caller's receiving device when the device is connected to the network;
- sending a response message over-the-air by forwarding the message to a remote paging terminal via the landline network; and
- sending a response message to a remote fax machine when the sender does not have a paging device.

Pagentry Receiver Model 200 has all of the capabilities of Model 100 plus the capability to:

- receive and display facsimile messages transmitted over-the-air; and
- receive and display facsimile messages retrieved via the landline network from store-and-forward fax communication devices.

In addition, each model provides other commonly required support functions which are typically needed by pager users. Utilizing state-of-the-art consumer electronics technology, Pagentry has achieved a level of portability, pricing, and functionality which is far beyond any other message entry device.

24. Facsimile capabilities. The applicant submits that the availability of a readily available, low-cost, full featured, highly portable message entry device which is compatible with a system utilizing GEM technology will stimulate alphanumeric offerings by many carriers and ignite tremendous alphanumeric paging growth. The facsimile capability in particular will expand the horizons of paging service. The Pagentry unit is capable of forwarding textual messages to any Group III facsimile machine. Pagentry is the world's first hand-held fax transmitter.[3/] This gives the Pagentry user another, very powerful means of communicating with other individuals. Appended hereto as Attachment 3 is a copy of actual facsimile output from a Pagentry device.

25. The base of facsimile machines in North America reportedly increased from just over a million units in 1987 to

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3/ In fact, the Guinness Book of Records is preparing to add an entry into its *Book of World Records*, listing Pagentry as the world's smallest facsimile device.

close to eight million in 1992.[4/] Facsimile industry observers generally predict a continuation of the explosive growth of fax use. According to The Fax People, a company in the facsimile industry, it is projected that the U.S. along will have over 13 million fax machines in operation by 1995. In fact, there will soon be almost as many fax machines in service in the U.S. as there are pagers. Among the factors cited are the advent of network services, new uses of the technology, and integration of fax and screen-based technologies. The GEM service, incorporating the use of the Pagentry devices, will provide new facsimile applications which will add to all of these developments.

26. Service to the hearing-impaired. Through provision for compatibility with existing telecommunications devices for the deaf (TDD), Pagentry receivers provide special capabilities for hearing-impaired individuals to communicate with hearing or other hearing-impaired individuals. This aspect of GEM service extends communications capabilities for the hearing-impaired. It also facilitates compliance by employers with the Americans with Disabilities Act of 1990, as amended, 42 U.S.C. 12101, et seq.

27. Data Communications. In addition to its paging and facsimile capabilities, the Pagentry unit is capable of

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4/ The source for this figure is Hitachi, a facsimile machine manufacturer.

acting as a portable data communications terminal, as if the user had a CRT in his or her pocket. It is capable of sending and receiving electronic mail messages over the landline network. It can be utilized as a Telecommunications Device for the Deaf. It provides touch-tone dialer functions in order to retrieve messages from answering machines or voice mail systems. It also provides calculator functions and may act as an alarm clock and a reminder calendar. The device also has the ability to send radio pages or fax messages to groups of individuals whose pager numbers and fax numbers have been prestored.

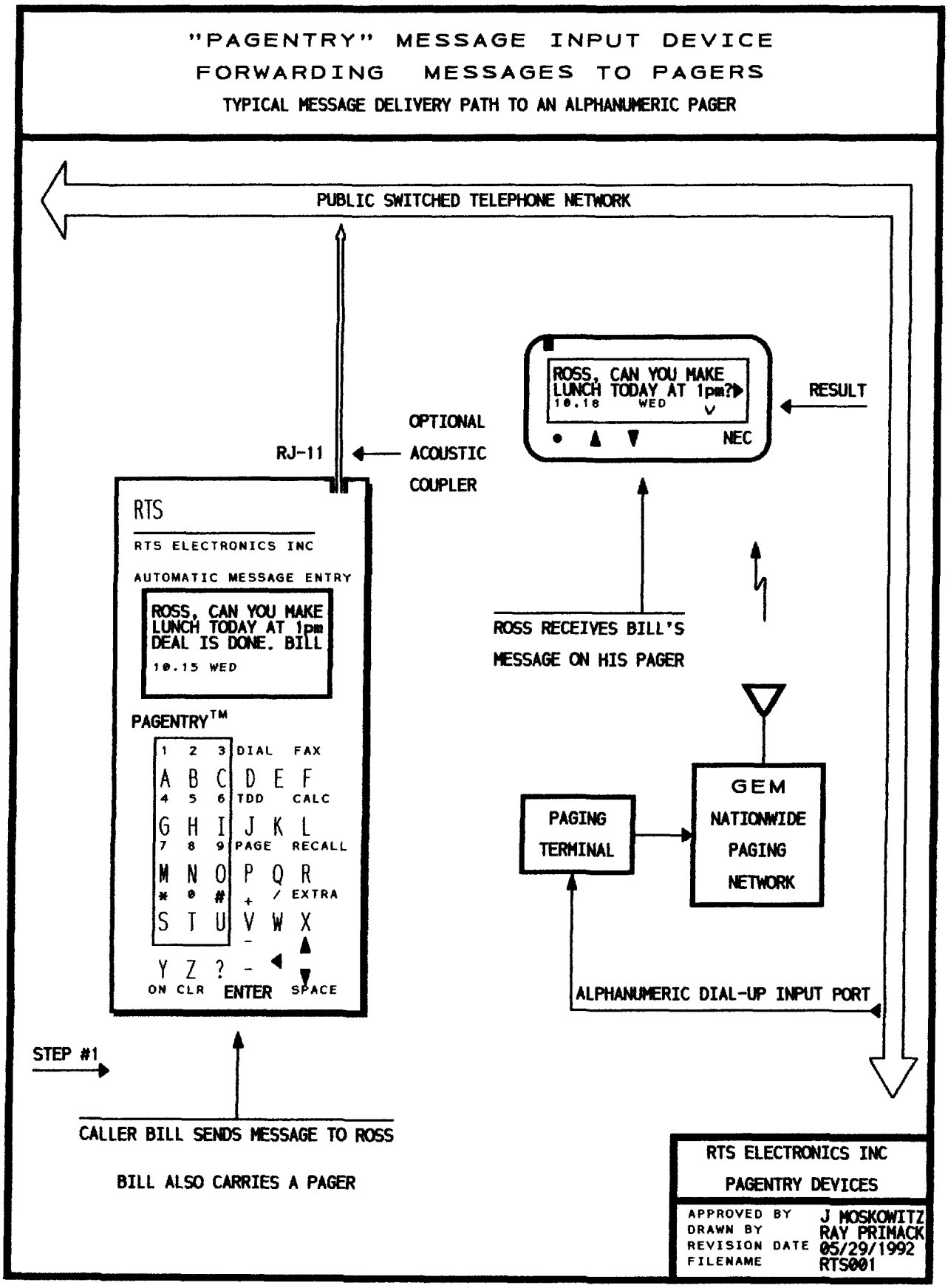
28. Several other built-in functions add to Pagentry's communication capabilities. The unit provides "canned text" support, allowing users to maintain hundreds of commonly used phrases and messages to reduce the amount of time it takes to prepare a radio page or fax message. The unit is multi-lingual, providing prompting and informative messages in several different languages, making it acceptable to yet a wider range of individuals. Information in Pagentry may easily be transferred to a personal computer (PC) for back-up purposes, or information may be transferred from a PC into Pagentry. A PC may also load radio pages or fax messages into Pagentry for later forwarding to an alphanumeric pager or fax machine. Hundreds of keyboard programmable parameters allow the user to customize the operation of an individual Pagentry

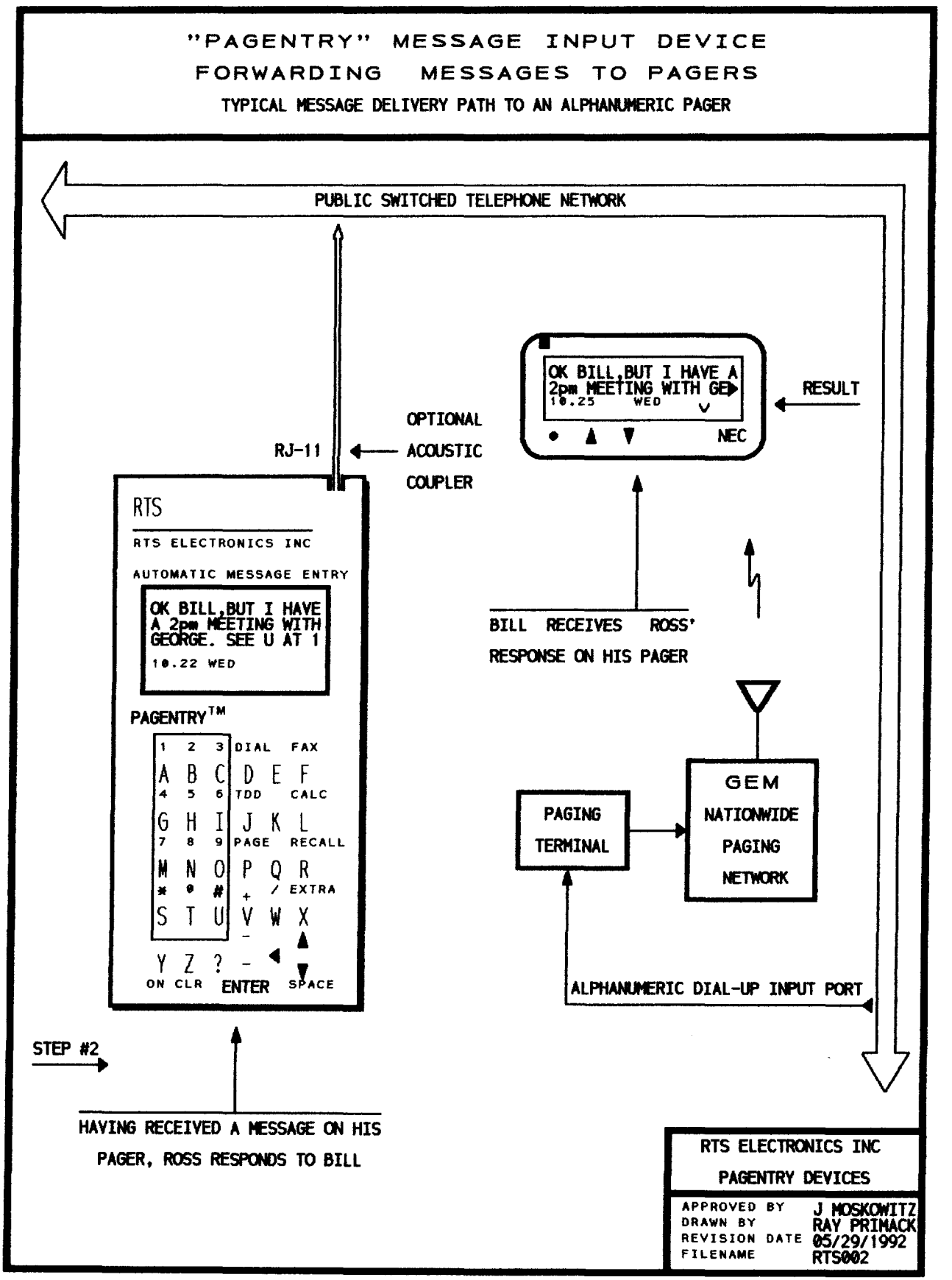
unit. All of these parameter values, as well as the name and telephone number directory, canned text, paging messages, fax messages, electronic mail messages, and other information maintained by each unit, may be printed out in hard copy form through the use of any facsimile machine. The Pagentry device will consequently have a major impact in making alphanumeric page entry more readily available to the public.

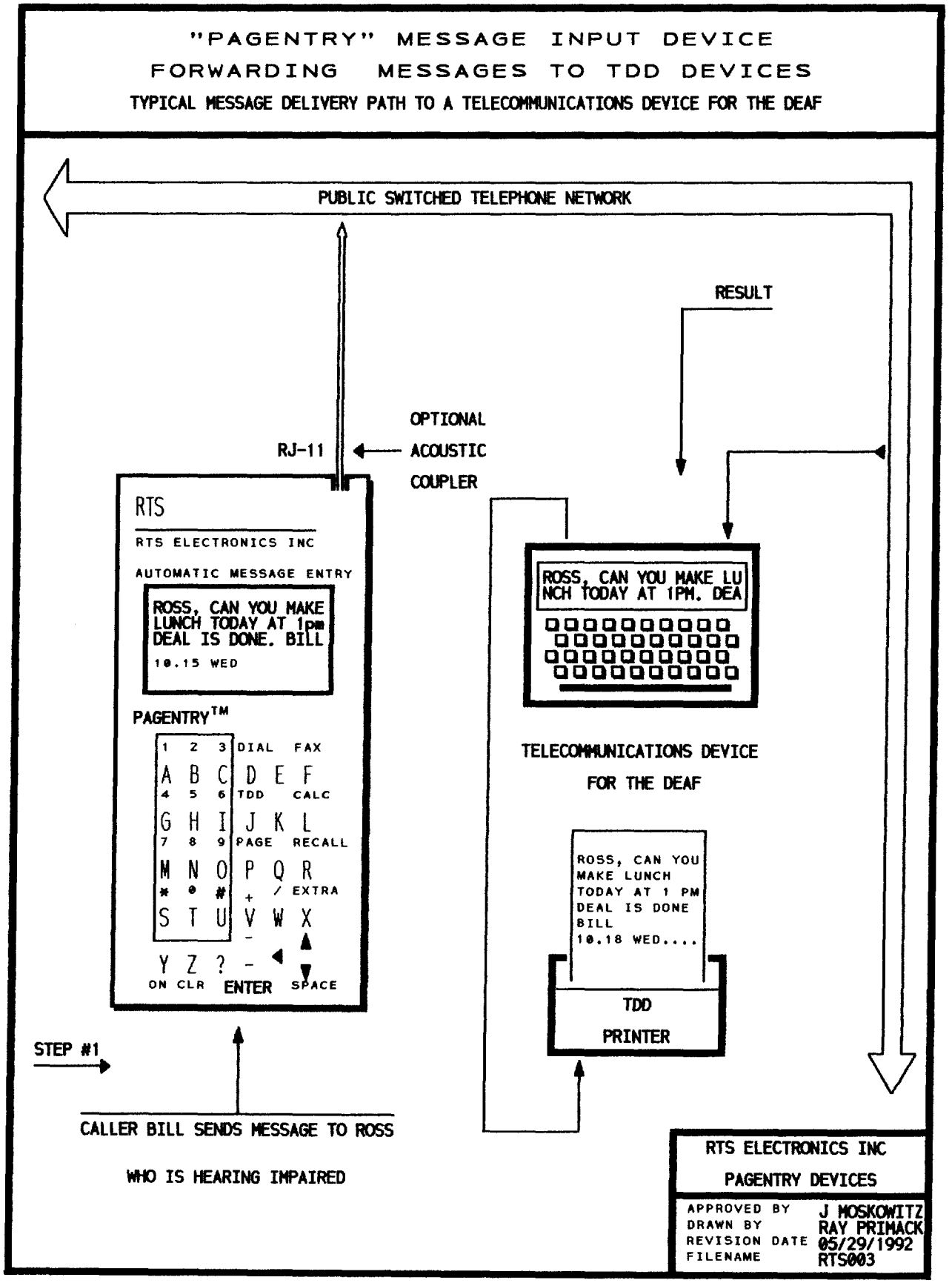
29. Immediately following this page are eight drawings which depict the methodology and results of some of the GEM uses of the Pagentry devices. The following table lists those drawings with brief explanations of the functions which they depict.

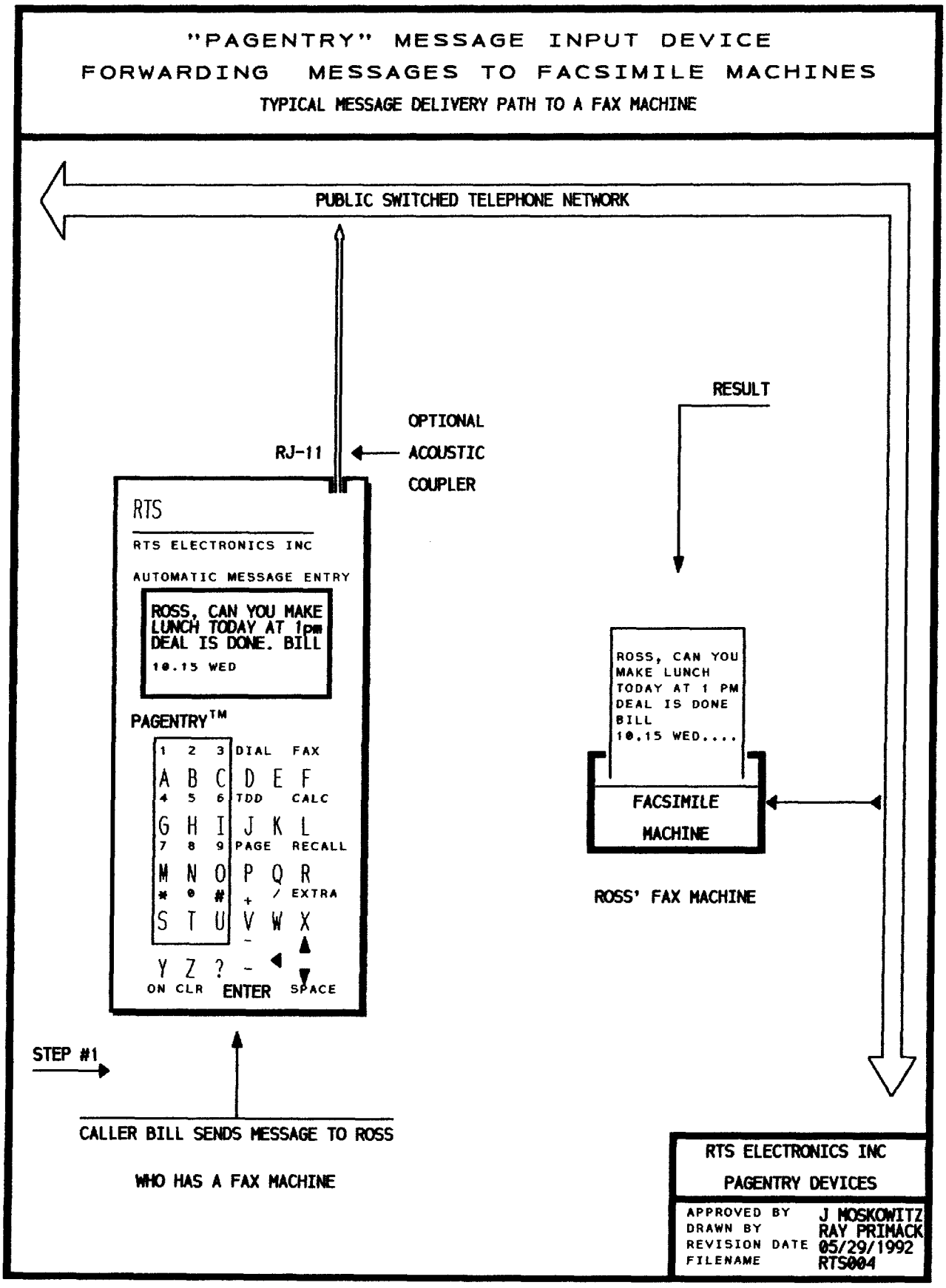
Table of Drawings of GEM Pagentry Use

1.0	RTS001:	Shows the method of sending an alphanumeric message from a pagentry device to a pager via a standard radio paging system. Bill wants to know if Ross is available to have lunch at 1 p.m.
2.0	RTS002:	Similar to RTS001. This sketch shows the reply to the initial message in RTS001.
3.0	RTS003:	If Ross is hearing impaired, this sketch shows delivery of the initial message to a "TDD" or telecommunications device for the deaf. The message is displayed and could be printed on the local TDD printer.
4.0	RTS004:	Shows delivery of the initial message, now in fax format, to Ross' fax machine via the landline telephone network.
5.0	RTS005:	Shows delivery of the initial message to an E-mail system for pickup by Ross via the landline telephone network.
6.0	RTS006:	In addition to all features of the Pagentry unit, the Model 100 is capable of receiving wireless messages. This sketch shows the Pagentry 100 device with built-in GEM format receiver, receiving a wireless message from a manual operator dispatch center via an GEM paging network. Ross receives the message via radio, but responds on his Pagentry 100 unit via the landline network.
7.0	RTS007:	In addition to all features of the Pagentry and Pagentry 100 models, the Model 200 can also receive urgent fax messages via radio and respond via the Landline Network (fax and/or paging).
8.0	RTS008:	Shows the delivery of a message from Ross' fax machine. The Pagentry 200 device receives an alert alphanumeric message via radio and collects the full fax message from the fax mailbox via the landline telephone network.


"PAGENTRY" MESSAGE INPUT DEVICE
FORWARDING MESSAGES TO PAGERS
TYPICAL MESSAGE DELIVERY PATH TO AN ALPHANUMERIC PAGER
PUBLIC SWITCHED TELEPHONE NETWORK
ROSS, CAN YOU MAKE LUNCH TODAY AT 1pm?
10.18 WED
NEC
RESULT
OPTIONAL
ACOUSTIC
COUPLER
RJ-11
RTS
RTS ELECTRONICS INC
AUTOMATIC MESSAGE ENTRY
ROSS, CAN YOU MAKE LUNCH TODAY AT 1pm
DEAL IS DONE. BILL
10.15 WED
PAGENTRY™
1 2 3 DIAL FAX
A B C D E F
4 5 6 TDD CALC
G H I J K L
7 8 9 PAGE RECALL
M N O P Q R
* 0 # + / EXTRA
S T U V W X
- ▲
Y Z ? - ◀ ▼
ON CLR ENTER SPACE
ROSS RECEIVES BILL'S
MESSAGE ON HIS PAGER
GEM
NATIONWIDE
PAGING
NETWORK
PAGING
TERMINAL
ALPHANUMERIC DIAL-UP INPUT PORT
STEP #1
CALLER BILL SENDS MESSAGE TO ROSS
BILL ALSO CARRIES A PAGER
RTS ELECTRONICS INC
PAGENTRY DEVICES
APPROVED BY J MOSKOWITZ
DRAWN BY RAY PRIMACK
REVISION DATE 05/29/1992
FILENAME RTS001


"PAGENTRY" MESSAGE INPUT DEVICE
FORWARDING MESSAGES TO PAGERS
TYPICAL MESSAGE DELIVERY PATH TO AN ALPHANUMERIC PAGER
PUBLIC SWITCHED TELEPHONE NETWORK
OK BILL,BUT I HAVE A 2pm MEETING WITH GE
10.25 WED
NEC
RESULT
OPTIONAL
ACOUSTIC
COUPLER
RJ-11
RTS
RTS ELECTRONICS INC
AUTOMATIC MESSAGE ENTRY
OK BILL,BUT I HAVE A 2pm MEETING WITH GEORGE. SEE U AT 1
10.22 WED
PAGENTRY™
1 2 3 DIAL FAX
A B C D E F
4 5 6 TDD CALC
G H I J K L
7 8 9 PAGE RECALL
M N O P Q R
* 0 # + / EXTRA
S T U V W X
- ▲
Y Z ? - ◀ ▼
ON CLR ENTER SPACE
BILL RECEIVES ROSS' RESPONSE ON HIS PAGER
GEM NATIONWIDE PAGING NETWORK
PAGING TERMINAL
ALPHANUMERIC DIAL-UP INPUT PORT
STEP #2
HAVING RECEIVED A MESSAGE ON HIS PAGER, ROSS RESPONDS TO BILL
RTS ELECTRONICS INC
PAGENTRY DEVICES
APPROVED BY J MOSKOWITZ
DRAWN BY RAY PRIMACK
REVISION DATE 05/29/1992
FILENAME RTS002


"PAGENTRY" MESSAGE INPUT DEVICE
FORWARDING MESSAGES TO TDD DEVICES
TYPICAL MESSAGE DELIVERY PATH TO A TELECOMMUNICATIONS DEVICE FOR THE DEAF
PUBLIC SWITCHED TELEPHONE NETWORK
RESULT
OPTIONAL
ACOUSTIC
COUPLER
RJ-11
RTS
RTS ELECTRONICS INC
AUTOMATIC MESSAGE ENTRY
ROSS, CAN YOU MAKE LUNCH TODAY AT 1pm DEAL IS DONE. BILL
10.15 WED
PAGENTRY™
1 2 3 DIAL FAX
A B C D E F
4 5 6 TDD CALC
G H I J K L
7 8 9 PAGE RECALL
M N O P Q R
* 0 # + / EXTRA
S T U V W X
Y Z ? -
ON CLR ENTER SPACE
ROSS, CAN YOU MAKE LU NCH TODAY AT 1PM. DEA
TELECOMMUNICATIONS DEVICE
FOR THE DEAF
ROSS, CAN YOU
MAKE LUNCH
TODAY AT 1 PM
DEAL IS DONE
BILL
10.18 WED....
TDD
PRINTER
STEP #1
CALLER BILL SENDS MESSAGE TO ROSS
WHO IS HEARING IMPAIRED
RTS ELECTRONICS INC
PAGENTRY DEVICES
APPROVED BY J MOSKOWITZ
DRAWN BY RAY PRIMACK
REVISION DATE 05/29/1992
FILENAME RTS003


"PAGENTRY" MESSAGE INPUT DEVICE
FORWARDING MESSAGES TO FACSIMILE MACHINES
TYPICAL MESSAGE DELIVERY PATH TO A FAX MACHINE
PUBLIC SWITCHED TELEPHONE NETWORK
RESULT
OPTIONAL
ACOUSTIC
COUPLER
RJ-11
RTS
RTS ELECTRONICS INC
AUTOMATIC MESSAGE ENTRY
ROSS, CAN YOU MAKE LUNCH TODAY AT 1pm DEAL IS DONE. BILL
10.15 WED
PAGENTRY™
1 2 3 DIAL FAX
A B C D E F
4 5 6 TDD CALC
G H I J K L
7 8 9 PAGE RECALL
M N O P Q R
* 0 # + / EXTRA
S T U V W X
- ▲
Y Z ? - ◀ ▼
ON CLR ENTER SPACE
ROSS, CAN YOU MAKE LUNCH TODAY AT 1 PM DEAL IS DONE BILL 10.15 WED....
FACSIMILE MACHINE
ROSS' FAX MACHINE
STEP #1
CALLER BILL SENDS MESSAGE TO ROSS
WHO HAS A FAX MACHINE
RTS ELECTRONICS INC
PAGENTRY DEVICES
APPROVED BY J MOSKOWITZ
DRAWN BY RAY PRIMACK
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FILENAME RTS004