

292R Conference/Alerting System Description

FCC Registration No. BPX826-68172-KF-N

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1. general description

1.01 The Tellabs 292R Conference/Alerting System (figure 1) is a multistation ringdown telephone conference circuit designed primarily for use in local emergency reporting and alerting applications and in business conferencing applications. The 292R System provides simultaneous access to up to 60 local stations either from a dedicated telephone (i.e., a "master" station) or from any local telephone line via a listed directory number. Conferees are provided with emergency conference capability at their everyday home or business telephones with no disruption of normal telephone service except during an emergency call. All stations assigned to the conference network are signaled via a distinctive ringing format on conference calls. The 292R System can be used with any conventional Class 5 or FCC-registered PBX switching system. Services provided by the 292R System are typically used by fire departments, paramedic teams, airport emergency crews, banks, stores, and factories with multiple branch locations, and the like.

Note: Systems larger than 60 lines can be configured for specific applications. For additional information, please contact Tellabs' Application Engineering Group at your Tellabs Regional Office or our U.S. or Canadian Headquarters. Telephone numbers are listed in paragraph 5.02.

1.02 In the event that this Practice section is re-issued, the reason for reissue will be stated in this paragraph.

1.03 The 292R System offers a choice of three methods of originating a conference: automatic origination, manual origination, or a combination of the two. The method chosen will, of course, depend upon local requirements.

1.04 With **automatic conference origination**, a call from any local line to a listed emergency-reporting number causes all stations assigned to the conference network to ring distinctively. These stations may be the home telephones of emergency crewmen (e.g., firemen or paramedics) or, in other applications, designated PBX stations (e.g., those of key executives and/or emergency personnel). Anyone in the conference network may answer the call and hold up the conference for the purpose of relaying information. The conference can be maintained until the last conference station goes on-

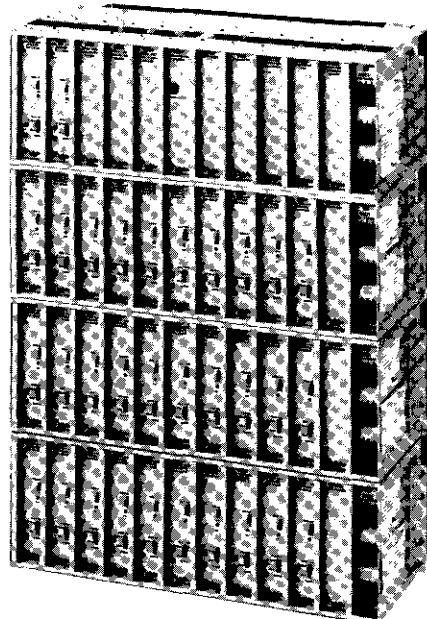


figure 1. 292R Conference/Alerting System

hook, or the conference can be forced idle after a predetermined timeout interval (adjustable from 1.5 to 5 minutes). This latter feature clears the conference in the event that a conference station is accidentally left off-hook.

1.05 With **manual conference origination**, a master location manned 24 hours per day receives all emergency-reporting calls via a dedicated telephone. The person on duty at the master location (normally a dispatcher or a member of the emergency crew designated the "duty" crewman), upon receiving an emergency-reporting call, goes off-hook with a second dedicated telephone (the master station in the conference network), causing all stations in the conference network to ring distinctively. The dispatcher or duty crewman provides all answering personnel with the necessary information concerning the emergency. The conference is held up as long as the master station remains off-hook unless the System is optioned otherwise.

1.06 When the master location can be manned only part of the time, the 292R System can be arranged for **both automatic and manual conference origination**. While the master location is manned, manual conferencing is enabled. While the master location is unmanned, a call to the listed emergency-reporting number is transferred into the 292R System and automatic conferencing is enabled.

1.07 When an emergency conference is not in effect, all stations assigned to the conference network are provided with normal residential (or PBX)

telephone service. When a conference is in effect, anyone involved in the conference need only depress the hookswitch momentarily to be disconnected from the conference and restored to normal service unless the system is optioned otherwise.

1.08 In addition to the operational capabilities previously mentioned (distinctive ringing or conference calls, automatic and/or manual conference origination, and compatibility with any conventional Class 5 or FCC-registered PBX switching system), the 292R System provides the following features related to its installation and operation:

- ★ sleeve-lead, loop-start (Type II E&M signaling interface), or ground-start control of conference access.
- ★ accommodation of up to three ringing frequencies for harmonic ringing.
- ★ ringing timeout to terminate ringing at stations where conference calls are not answered.
- ★ timed siren control, either continuous or interrupted, under control of any number of stations.
- ★ remote-access capability, whereby emergency personnel away from home can call in via an unlisted number and be connected to a conference in progress.
- ★ an integral tone oscillator that eliminates the need to connect to office tone sources.
- ★ individual fusing for all modules in the System.
- ★ optional supervisory lamp panel available.
- ★ optional selective signaling for up to 11 groups of stations (for CO installations only; dual tone multifrequency [DTMF] telephone sets are required).
- ★ easy optioning: most options are switch-selectable.
- ★ easy installation, facilitated by a standardized wiring scheme and prewired, connectorized backplates on the System's equipment shelves.
- ★ easy alignment and testing, facilitated by the Tellabs 9802 Card Extender.

1.09 Designed for either central-office or PBX-equipment-room installation, the 292R System mounts in either a 19 or 23-inch relay rack. In CO applications, all cabling between the System's equipment shelves, as well as cabling from shelves to office distributing frames, is simplified through the use of connectorized cables that plug into connectors on the backplates of the System's equipment shelves (see figure 2). For PBX-equipment-room applications, cabling between the equipment shelves and from the shelves to USOC (Universal Service Order Code) connectors (network interface connections) is simplified through use of connectorized cable adapters that plug into connectors on the backplates of the 292R System's equipment shelves. Cable adapters that conform to the USOC RJ21X format are used for connections from the 292R's manual, automatic, and remote-access ports to the PBX. Cable adapters that conform to the

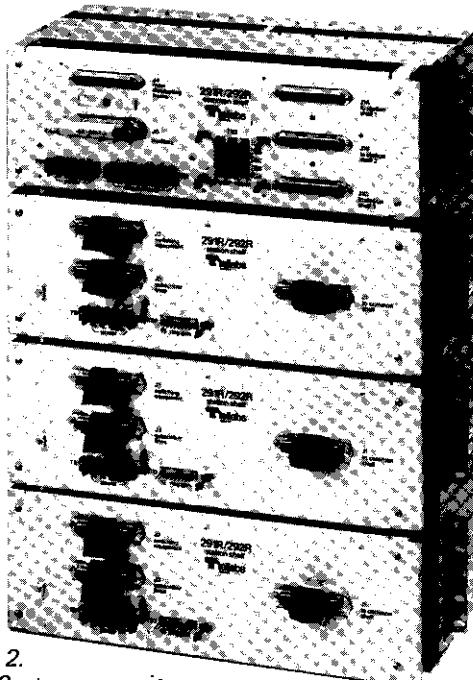


figure 2.
292R System, rear view

USOC RJ71C format are used for connections from the 292R's line circuit modules to their associated PBX conference stations.

1.10 In CO applications, the 292R System is powered from filtered -48Vdc central-office battery. For PBX-equipment-room applications of up to 30 stations, the optional Tellabs 8007 Power Supply (-48Vdc, 10 amperes) is normally used. PBX-equipment-room applications of up to 60 stations (fully loaded) require two 8007 Power Supplies.

1.11 In CO applications, the 292R System normally uses the central office's ringing generator. Ringing for a fully equipped 292R System in a PBX-equipment-room application can be provided by three Tellabs 8108 20Hz Ringing Generators (20 watts each).

2. system components

2.01 A 292R Conference/Alerting System equipped for the maximum number of lines (60) plus remote access and siren control normally consists of the following:

- ★ one 292R Conference/Alerting System Mounting Assembly configured for 60 lines. In this configuration, the 292R Assembly consists of seven prewired Type 10 Mounting Shelves with connectorized backplates and six connectorized cables for interconnecting the Shelves. For PBX-equipment-room applications, seven USOC cable adapters are available for connecting the 292R System to the PBX. A 9802 Card Extender and an auxiliary bypass connector are also provided with these Shelves.
- ★ seven 9021 Fuse Modules.
- ★ one 9003A Ringing Interrupter Control Module.
- ★ one 9132 Ringing Timer module.

- ★ one 9121 Tone Supply module.
- ★ one 9133 Long Interval Timer module (see note 1 below).
- ★ sixty 9291 2Wire Automatic Ringdown (ARD) Conference Terminate Line Circuit Modules.
- ★ two 9296 2Wire ARD Trunk Access Modules optioned as conference-access trunk circuits in positions 1 and 2 of the common equipment shelf (automatic conferencing only; see note 2 below).
- ★ one 9293 2Wire ARD Conference Originate Line Circuit Module (manual conferencing only).
- ★ one 9294 2Wire Conference Amplifier module.
- ★ three 9296 2Wire ARD Trunk Access Modules optioned as remote-answer trunks in positions 3 through 5 of the common equipment shelf.
- ★ two Tellabs 8007 10 Ampere Power Supplies (optional for PBX-equipment-room applications; for 30 stations or less, only one 8007 need be used).
- ★ three 8108 20Hz Ringing Generators (20 watts each; optional for PBX-equipment-room applications).

Note 1: For single-digit DTMF activation of a siren, one 6072 Single-Digit DTMF/Dial Decoder module (optional) is required with the 9133 module.

Note 2: For combined automatic and manual conferencing, one 9296 Trunk Access Module and one 9293 Conference Originate Line Circuit Module are used in the System.

2.02 Following is a brief description of each of the components of the 292R System. Detailed information on these items can be found in the Tellabs Practice on each.

292R Conference/Alerting System Mounting Assembly

2.03 The 292R Conference/Alerting System Mounting Assembly provides the necessary hardware to mount and interconnect the modules in the System. The 292R Assembly is available in configurations for 19 and 23-inch rack installation and for maximums of 10 to 60 (in multiples of 10) emergency crew members' lines. One Assembly consists of the following items:

- ★ two to seven Type 10 Mounting Shelves. One of these Shelves has a connectorized backplate wired for the System's common equipment, and each of the other Shelves has a connectorized backplate wired for 10 emergency crewmen's line circuits.
- ★ one to six connectorized cables for interconnecting the Shelves.
- ★ one auxiliary bypass connector (equipped with a bypass plug for circuit continuity), which provides access to internal control leads required for special System applications.
- ★ one 9802 Card Extender. The 9802 provides a convenient means of testing and aligning a 292R System module while that module is actually operating in the System. The 9802 plugs into the

module's Assembly position, and the module then plugs into the 9802. The module thus projects from the Assembly to allow access to the connector pins, adjustment of potentiometers, and switch-selection of options.

- ★ For PBX-equipment-room applications, two to seven USOC cable adapters are provided.

System Modules

2.04 The modules in the 292R System can be functionally grouped into three classifications: internal control modules, central office (or PBX-access) interface modules, and station interface modules. The **internal control modules** perform all necessary amplification, ringing, timing, tone-supply, and fusing functions of the System. These modules include the 9294 Conference Amplifier, the 9121 Tone Supply module, the 9132 Ringing Timer, the 9003A Ringing Interrupter Control Module, the 9133 Long Interval Timer module, and the 9021 Fuse Module. The **central office (or PBX-access) interface modules** provide the necessary switching functions to originate a conference and to allow remote access to the conference. These modules include the 9296 Trunk Access Module and the 9293 Conference Originate Line Circuit Module. The **station interface modules** are 9291 2Wire ARD Conference Terminate Line Circuit Modules, which transfer conference stations from standard residential (or PBX) service to the conference circuit when the System is activated. Each of the System modules is described individually in the following paragraphs.

9294 2Wire Conference Amplifier

2.05 The 9294 2Wire Conference Amplifier module is a summing amplifier. It sums the voice-path signals of all the conference lines that are active, provides gain, and distributes the summed signals to all the active lines.

9121 Tone Supply

2.06 The 9121 Tone Supply module, when used in the 292R System, supplies both ringback tone (440 + 480Hz interrupted at 30ipm) and alerting tone (400 + 620Hz interrupted at 120ipm). The System extends ringback tone to the originating station until the first conference station is answered. The alerting tone is applied to busy conference lines to provide notification that a conference call is waiting. By supplying these tones, the 9121 module eliminates the need for connection to the office tone supply.

9132 Ringing Timer

2.07 The 9132 Ringing Timer module provides control timing for the 9003A Ringing Interrupter Control Module in the form of 1-second signals. The 9132 module also provides an adjustable timeout circuit to control the length of time the conference stations will ring if not answered. This timeout circuit can also be optioned to force the conference idle after a predetermined timeout interval has expired. This option clears the conference in the event that a conference station is accidentally left off-hook. The timeout circuit activates whenever the

master station goes off-hook (manual mode) or in response to an incoming call (automatic mode). The timer is automatically reset after the first conference station answers or when a second incoming fire reporting call is made and one or more conference stations are still involved in the first conference call. An optional two-position lever key can be installed at the headquarters of the emergency organization using the 292R System (e.g., a fire station) to allow a short or long ringing timeout interval to be selected.

9003A Ringing Interrupter Control Module

2.08 The 9003A Ringing Interrupter Control Module divides the ringing load into two groups. When one group is connected to the ringing source, the other group is connected to either battery or ground. This configuration is reversed once every second in response to control signals supplied by the 9132 module. Each of the six ringing generator outputs is individually current-limited to a maximum of 200 milliamperes and is provided with a fault detection circuit. This fault detection circuit provides an external fault indication when an overload condition (caused by a shorted cable or loss of ringing generator voltage) is sensed. The 9003A module can be optioned for either battery bias or ground bias.

9133 Long Interval Timer

2.09 The 9133 Long Interval Timer module provides the means to start a community siren and to control the duration of its operation. The 9133 can be optioned for three different modes of operation: manual, fixed time interval, and fixed time interval with override capability. In the manual mode, the siren operates only while a pushbutton is depressed. In the fixed-time-interval mode, the siren starts when the pushbutton is depressed and continues to operate until the predetermined time interval expires. In the third mode (fixed time interval with override), the siren starts when the pushbutton is depressed and continues to operate for the predetermined time unless the pushbutton is depressed again, at which time the siren stops. Operation of the siren in any mode is possible only while the conference circuit is activated. The 9133's timing interval is adjustable from approximately 1 second to 26 minutes by means of two miniature 10-position rotary switches and a potentiometer on the module. When the 9133 module is optioned for either the fixed-time-interval or the fixed-time-interval-with-override mode, an additional siren-interrupter-timing option can be selected. This option permits the siren to be continuously interrupted (on and off) during the entire time the siren is activated. Both the on-time and off-time intervals can be independently adjusted over a 1 to 10 second range.

9021 Fuse Module

2.10 The 9021 Fuse Module provides 13 distribution fuses functionally arranged in 2 groups, one of 6 fuses and the other of 7 fuses. In the 292R System, the 9021 is used to separately fuse the

circuits of each of the other modules in the same Assembly, thus preventing a single module's malfunction from affecting power to the rest of the System. A front-panel LED and an alarm relay provide, respectively, a local visible indication and leads for a remote indication of a blown fuse in any of the circuits served by the 9021 module. Fuses in the 9021 are Buss GMT-type fuses rated at 0.25 ampere. Located on the front panel of the module, these fuses can be replaced without removing the module from the Assembly.

9296 2Wire ARD Trunk Access Module

2.11 The 9296 2Wire ARD Trunk Access Module (when appropriately optioned and used in position 1 or 2 of the common equipment shelf) is used to initiate a conference call automatically (from a call placed by any DDD network telephone to a directory number) via a central-office line circuit. When an automatic conference is initiated by dialing a directory number, the 9296 generates a start pulse to signal all conference stations and also provides a holding ground signal to maintain the conference in the active state. The 9296 module (when appropriately optioned and used in position 3, 4, or 5 of the common equipment shelf) can also be used as a remote-answer trunk circuit. When a siren is used in addition to regular telephones for notification (manual or automatic conferencing applications), up to three remote-answer trunk circuits are used. These modules are connected to a line-hunting connector group reached by dialing an unpublished directory number. This arrangement permits emergency personnel who are away from their regular telephones when the siren alarm is activated to dial the unpublished number and be connected to the conference. The line group can be accessed only when a conference is in progress and a siren is activated. At all other times this group is marked busy to all incoming calls. The 9296 module (when used in either a remote answer trunk or an automatic conference access trunk application) provides the interface between the 292R System and any SxS, No. 1 EAX, No. 2 EAX, X-Bar, or DMS-100 switching system equipped for sleeve-lead or C-lead control or a DMS-10 System using Type II E&M signaling interface (loop-start or ground-start lines).

9293 2Wire ARD Conference Originate Line Circuit Module

2.12 The 9293 2Wire ARD Conference Originate Line Circuit Module is used to initiate a conference call manually from a dedicated conference-origination telephone (master station). The 9293 module supplies talk battery to the master station and performs all necessary switching functions to originate a conference when the master station goes off-hook. These functions include outputting a start pulse to all 9291 modules, providing system-locking ground to hold up the conference under control of the master station, and supplying ringback tone to the master station until the first party in the conference answers. The 9293 also contains circuitry to

allow the master station to be equipped with a pushbutton to control a community siren or other external alerting device, if one is used.

9291 2Wire ARD Conference Terminate Line Circuit Module

2.13 As stated previously, up to 60 conference stations can be signaled simultaneously upon activation of the 292R System. This is accomplished by routing each station's central-office (or PBX) line circuit through a 9291 2Wire ARD Conference Terminate Line Circuit Module. When the System is activated, the 9291 module transfers each conference station from its standard residential (or PBX) service to the conference circuit. (Distinctive ringing is provided by the 9132 Ringing Timer module to distinguish a conference call from a normal call; see paragraph 2.07.) If a conference station is busy with a normal call at the time the conference is activated, the 9291, depending upon optioning, either disconnects the call in progress and connects the station to the conference or applies an alerting tone to notify the station user (emergency crew member) that a conference call is waiting. The crew member need only depress the hookswitch momentarily to be connected to the conference. In applications where the 292R System interfaces a CO, the local line appearance of each conference station is marked busy by the 9291 upon connection to the conference network. In applications where the 292R System interfaces a PBX that provides for marking individual line appearances busy, the 9291 marks the conference lines busy to normal traffic during a conference. If the PBX is not of the aforementioned types, the 9291 can be optioned either to ignore the incoming call or to trip ringing voltage on incoming calls, after which the 9121 applies "busy" (interrupted alerting) tone and then, after a preset time interval, drops the call.

Note: *In the latter case, because the 9291 essentially "answers" the call, the caller will be billed for any toll charges incurred.*

6072 Single-Digit DTMF/Dial Decoder (optional)

2.14 The 6072 Single-Digit DTMF/Dial Decoder module, when used in the 292R System, provides the means for any conference station, when equipped with a DTMF telephone, to start a community siren by simply pressing the * pushbutton. Operation of the siren is possible only when the conference circuit is activated. Once the siren is started, its operation is controlled by the 9133 Long Interval Timer module. The 6072 module (with which an optional auxiliary bypass connector is also required) can provide the dispatcher or other key personnel with the means to selectively signal up to 11 separate groups of stations. This feature permits the dispatcher to call only the crew members required for that particular emergency. For example, paramedics can be assigned to one group, firemen to another group, other emergency crew members to a third group, and so on. For additional information regarding this, and other selective signaling features, please contact Tellabs' Application Engineering Group at your Tellabs

Regional Office or our U.S. or Canadian Headquarters. Telephone numbers are listed in paragraph 5.02.

3. application

3.01 The 292R Conference/Alerting System is used primarily in local emergency reporting and alerting applications. In these applications, it provides volunteer fire departments, paramedic teams, and other emergency organizations with a means of receiving emergency calls, activating a community siren (if one is used), and informing emergency personnel of details concerning an emergency over their home (or business) telephones via a ringdown conference network. Figure 3 shows a typical application of this type. The 292R System can also be used by businesses for emergency-reporting and alerting purposes and/or for multiparty conference calls involving key personnel within a company (i.e., "command" conferencing). Typical business users of the 292R System include downtown banks and stores with several suburban branches and manufacturing firms with their main offices at one location and their factories at several different locations. Figure 4 shows a typical application of this type.

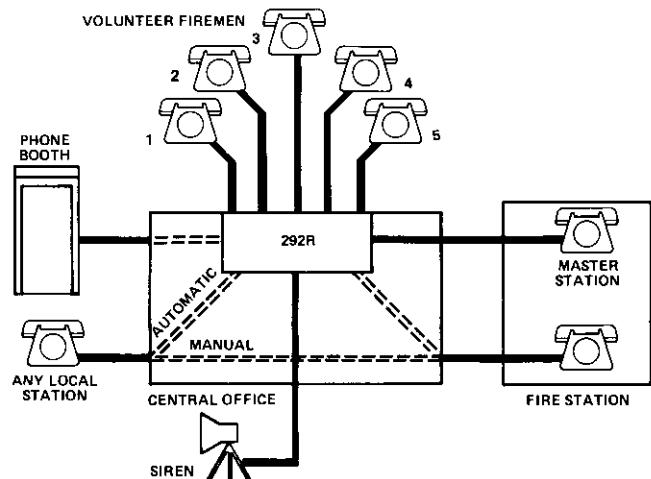
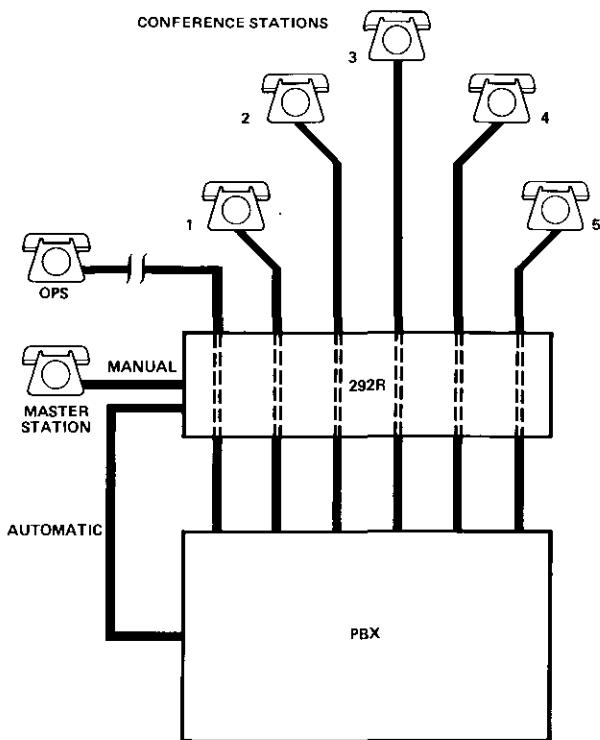


figure 3. Typical 292R fire-reporting (fire bar) application

3.02 Although emergency-reporting systems are used by a variety of emergency organizations, these systems have traditionally been associated with volunteer fire departments (and therefore known as "fire bars"). For this reason, as well as for clarity and brevity, the application information in this section is written in terms of the 292R System's use in fire-reporting applications only. Because the requirements for emergency-reporting systems are extremely varied, certain nonstandard features and nonconventional applications may not be covered in this practice. If you require such information, please consult Tellabs' Application Engineering Group at your local Tellabs Regional Office or our U.S. or Canadian Headquarters. Telephone numbers are listed in paragraph 5.02.

background

3.03 In the past, before automatic exchanges and emergency conference systems came into use, all fire-reporting calls were typically received by an



Note: DTMF selective signaling can be provided to select a group or groups of stations for the conference.

figure 4. Typical 292R business conference application

operator at the town's manual exchange. The operator connected the fire call to the fire station, took the necessary information concerning the fire (the fireman on the line at the fire station also received this information so that he could notify the firemen on duty), and immediately activated the community siren. Upon hearing the siren, the town's volunteer firemen who were away from the fire station called the operator, who acted as dispatcher and provided them with the necessary information.

3.04 The advent of automatic exchanges made the fire-reporting arrangement described in the preceding paragraph impractical, so emergency-reporting conference systems ("fire bars") were developed to work in conjunction with the automatic exchanges. A telephone conference system eliminates the necessity of relying solely upon a siren as a means of notifying volunteer firemen of a fire. To notify firemen who are away from home, a siren can also be activated. If the conference system is arranged for remote access, firemen away from home, upon hearing the siren, can call in via an unpublished number and be connected to the conference. The fireman or dispatcher in charge of maintaining the conference can then direct them to the proper location.

types of conferencing

3.05 Depending upon local requirements, the 292R System can be arranged for automatic conference origination, manual conference origination, or both. In general, automatic conferencing is used in applications where a master location cannot be provided or is not desired, manual conferencing is

used where a master location can be manned 24 hours per day, and both types of conferencing are used where a master location can be manned only part of the time.

automatic conferencing (9296 module)

3.06 In an automatic conferencing arrangement, the 292R System is activated directly from an incoming fire-reporting call and rings all idle firemen's lines with a distinctive 1-second-on, 1-second-off ringing interval. Any fireman can answer the call and hold up the conference for the purpose of relaying information. A fireman who wishes to disconnect from the conference need only go on-hook momentarily, as this restores normal residential service (unless the System is optioned otherwise). The conference, however, is maintained until all firemen go on-hook. The System provides adjustable ringing timeout on conference lines to stop the ringing of unanswered firemen's telephones after a predetermined interval.

Note: If the fire-reporting caller has returned to the on-hook state but the conference is still maintained because one or more of the conference stations are still off-hook, a subsequent fire-reporting call resets the 9132 Ringing Timer module and re-rings all conference stations that are on-hook.

3.07 For firemen's lines that are busy at the time a fire-reporting call is made, the System either applies an alerting tone to indicate that a conference call is waiting or immediately cuts off the existing calls on the busy lines and transfers these lines into the conference. The choice of alerting tone or immediate cutoff for busy lines is an individual station option. When the alerting-tone option is selected, a fireman need only depress the telephone's hookswitch momentarily to be connected to the conference.

3.08 Certain key firemen can be supplied with pushbuttons (not provided with the System) to start a siren if a community siren is to be used to notify firemen away from home that a conference is in progress. When a siren is used, the 292R System can be (and typically is) equipped for remote access, whereby these firemen can call in via an unlisted number and be connected into the conference.

manual conferencing (9293 module)

3.09 In a manual conferencing arrangement, all fire-reporting calls are routed to a dedicated fire-report-answer telephone at a master location. Normally, the master location is a central dispatch facility if a single emergency number (e.g., 911) is used or the fire station if a separate fire-reporting number is used. The fire report-answer telephone is typically dialless (unless the System is optionally equipped for selective signalling, which requires a DTMF-type telephone), which ensures that it is used for incoming fire-reporting calls only.

3.10 After receiving a fire-reporting call, the dispatcher or duty fireman manually activates the conference by lifting the receiver of a second dedicated telephone (the conference-network master station)

at the master location. This causes the 292R System to ring all firemen's home telephones that are not busy (using the distinctive ringing interval previously mentioned) and to either apply alerting tone to all busy conference lines or immediately cut off the existing calls on busy lines and automatically transfer these lines into the conference (see paragraph 3.07).

3.11 As in automatic conferencing, the System provides adjustable ringing timeout on firemen's lines to stop the ringing of unanswered telephones after a predetermined interval. If desired, a switch (not supplied with the System) that allows a shorter ringing timeout interval to be optionally selected can be installed at the master location. Such a switch might be used, for example, in instances where the duty fireman or dispatcher has determined that enough firemen have responded to make further ringing unnecessary.

3.12 After receiving a conference call, any fireman can disconnect from the conference by going on-hook, at which time normal residential service is restored (unless the System is optioned otherwise). The conference circuit, however, does not release until the master station goes on-hook unless the System is arranged so that the conference is held up until the last fireman in the conference goes on-hook.

3.13 When the 292R System is activated manually via telephone, an optional supervisory lamp panel can be installed at the master location to monitor the firemen's individual line circuits. Each supervisory lamp is connected to one line circuit and lights when the fireman on that circuit answers the conference call. This informs the duty fireman or dispatcher as to how many firemen have responded and thus provides an indication of whether or not, and when, to activate the community siren.

3.14 The siren is activated by means of a push-button (not supplied with the System) at the master location. As in automatic conferencing, the push-button operates only while a conference is in progress, and the System can be equipped to provide automatic timing of the siren's operating interval, with manual override available to stop the siren before the interval expires. Also, as in automatic conferencing, when a siren is used for notification, the System is typically arranged for remote access (see paragraph 3.08).

3.15 Where it is not practical to man a master location 24 hours per day, a variation of the above may be used. In this alternate arrangement, two or more "key" locations (usually no more than three) are designated to answer all fire calls. These locations are chosen so that at least one is manned at any given time. Each key location must have a dedicated telephone for receiving only fire-reporting calls. (These telephones are all bridged across the same connector terminal in the central office.) An incoming fire-reporting call causes all key-location telephones to ring, and these telephones stop ringing when any one of them is answered.

3.16 Each key location also requires another dedicated telephone to activate the fire conference equipment for notification of the volunteer firemen and a pushbutton to control the siren. (The two telephones required at each location can be replaced with one multiline telephone if desired.) One of the key locations must be manned at all times.

3.17 Multiple key locations for manual conferencing are, however, less desirable than a single master location because a certain amount of confusion, noise, and impairment of transmission may result when more than one person answers a fire call. Multiple key locations also result in divided responsibility for siren operation and operation of the conference circuit. A more advantageous arrangement for installations where a master location cannot be manned around the clock is described in paragraph 3.18.

combined manual and automatic conferencing

3.18 With combined manual and automatic conferencing, a single master location, equipped as usual with a dedicated fire-report-answering telephone and a master station (conference-origination) telephone, is manned only part-time. While the master station is manned, manual conferencing is enabled; while the master station is unmanned, automatic conferencing is enabled. Manual or automatic conferencing is selected via a switch (not provided with the System) at the master location that transfers the fire-reporting number from the dedicated answering telephone to an automatic conferencing module. The duty fireman or dispatcher sets the switch for manual conferencing when he goes on duty and for automatic conferencing when he goes off duty.

supervision and ringing

3.19 The 292R System can be arranged to operate with sleeve or C-lead supervision (electromechanical switching systems), C and CN-lead supervision (EAX-type switching systems), and loop supervision (ESS-type switching systems). Arranging the System for these types of supervision requires both switch-optioning of certain modules and specific methods of wiring.

3.20 The 292R System accommodates up to three different ringing frequencies for compatibility with harmonic ringing. A machine-start lead is provided by the System to supply a switched ground to start a ringing generator when necessary, if required by the central office ringing supply.

basic requirements common to all conferencing arrangements

3.21 For any standard 292R System, be it arranged for automatic conferencing, manual conferencing, or both, the following items are always required:

- * one 292R System Mounting Assembly for the desired rack size (19 or 23 inches) and maximum number of lines (10 to 60).
- * one 9294 2Wire Conference Amplifier module.

- ★ one 9121 Tone Supply module.
- ★ one 9132 Ringing Timer module.
- ★ one 9003A Ringing Interrupter Control Module.
- ★ one to sixty 9291 2Wire ARD Conference Terminate Line Circuit Modules. One 9291 is required for each station in the conference network.
- ★ two to seven 9021 Fuse Modules. One 9021 is required for each equipment shelf in the System.

specific requirements for automatic conferencing

3.22 In automatic conferencing applications, at least one 9296 2Wire ARD Trunk Access Module must be used to perform the necessary switching functions to initiate a conference. It is, however, **strongly recommended** (although not mandatory) that two 9296's arranged as a hunting group always be used.

Note: Refer to paragraph 3.34 for information on an option that is recommended when two 9296's are provided.

3.23 In manual conferencing applications, one 9293 2Wire ARD Conference Originate Line Circuit Module is required in the 292R System to perform the necessary switching functions to originate a conference.

3.24 Also, in all manual conferencing applications, two dedicated telephones are required at the master location. One is a fire-report-answering telephone that is often dialless and that is arranged for answer-only operation; this prevents it from being used for outgoing calls. All local fire-reporting calls are routed to this telephone. The other telephone is the conference master station (also dialless) from which a conference is initiated by going off-hook.

3.25 Where two or more key locations are used instead of a single master location, each location must have both a dedicated fire-report-answering telephone and a dedicated conference-origination telephone. Each of the fire-report-answering telephones are bridged across the same connector terminal appearance.

Note: At the master location or at the two or more key locations, if used, the two separate telephones can be replaced by one multiline telephone, if desired.

specific requirements for combined automatic and manual conferencing

3.26 In all combined automatic and manual conferencing arrangements, the 292R System must be equipped with one 9296 2Wire ARD Trunk Access Module for automatic conference origination and one 9293 2Wire ARD Conference Originate Line Circuit Module for manual conference origination.

3.27 The master location must be equipped as usual with a dedicated fire-report-answering telephone, a dedicated conference-origination telephone (master station), and a siren-activation pushbutton. In addition, a two-position switch must be provided at the master location to transfer from manual conferencing (9293 module) to automatic conferencing (9296 module).

System options common to all conferencing arrangements

3.28 **Remote Access.** Remote access (see paragraph 3.08) is usually provided only where a community siren is used for notification of firemen away from home. To provide remote-access call-in capability, at least one 9296 (optioned as a 2wire ARD conference remote answer trunk) is required (in positions 3 through 5 of the common equipment shelf). Two or three 9296 modules can be used, however, to accommodate two or three remote-access conference calls simultaneously. When two or three 9296 modules (in positions 3 through 5 of the common equipment shelf) are used, these modules should be assigned to a hunting group.

3.29 **Siren Control.** Where a community siren is used for notification, the 292R System is ordinarily equipped with one 9133 Long Interval Timer module to control the duration of the siren. The 9133 can be set for any time interval between approximately 1 second and 26 minutes. In addition, the 9133 can be optioned to provide interrupted siren control, whereby both the on-time and off-time interval can be adjusted between 1 and 10 seconds. A pushbutton to activate the siren (not supplied with the System) is provided at the master station (or at any desired conference stations) in manual conferencing arrangements, at selected firemen's stations in automatic conferencing arrangements, and at both the master station and selected firemen's stations in combined manual and automatic conferencing arrangements. (All conference stations are able, by virtue of their associated 9291 Line Circuit Modules, to accommodate a siren pushbutton.) Each pushbutton must be connected between the tip side of the line and ground, which unbalances the line. Although a separate metallic ground conductor is not electrically required if a good earth ground is available, National Board of Fire Underwriters Standard No. 73 (1962), section 1227, implies that it is desirable not to rely on earth connections. Where earth ground is not used, i.e., where a separate pair is connected to the pushbutton, the maximum loop resistance of the pair should not exceed 2000 ohms.

Note: In 292R System applications where grounded ringing generators are used, siren-activation ground must be applied through an unused hookswitch contact. This prevents inadvertent grounding of the tip lead while the station is on-hook and receiving ringing, and thereby prevents the fuses associated with that particular station from blowing.

3.30 A switch option on the 9133 allows manual override of the timer so that the siren can be stopped before the preset interval expires by redepressing the pushbutton. Another switch option allows manual control of the siren so that the siren operates only when the pushbutton is held depressed. Where a fire station has its own siren on the premises and a duty fireman is present around the clock, the fire department may elect to let the duty fireman manually control the siren at all times. In this application, the 9133 module provides the

remote-access capability and marks the remote-access lines busy when the System is idle.

3.31 DTMF Siren Activation. When the 292R System is optionally equipped with the 6072 Single-Digit DTMF/Dial Decoder module, each conference station that is equipped with a DTMF telephone can start the community siren by simply pressing the * pushbutton. Operation of the siren is only possible when the conference circuit is activated. Once the siren is started, its operation is controlled by the 9133 module. The various operating modes of the 9133 module are explained in paragraph 3.30.

3.32 Supervisory Lamp Panel. In conjunction with the siren-control option, an optional supervisory lamp panel can be installed at the master location in manual or combined conferencing arrangements. With one lamp connected to each fireman's line circuit (via a separate lead for each lamp), the duty fireman or dispatcher has a visible indication of how many firemen are involved in the conference and whether activating the siren is necessary. The loop resistance limit for the supervisory-panel lamp pairs depends upon several factors (e.g., type of lamps or LED's used, current limiting provided, etc.). **Please be aware that the dc resistance of each pair must be considered when calculating the loop limit for the supervisory lamps.** The panel itself is wired with one lead per lamp and a common battery feed (or with a separate pair for each lamp and one side of each pair connected to office battery, although this is less practical).

Note: Although not normally used in automatic conferencing applications or in manual conferencing applications where more than one station is provided with siren-activation capability, a supervisory lamp panel can be installed, if desired, wherever a fireman's telephone and siren-activation pushbutton are located.

3.33 Selective Signaling. When the 292R System is optionally equipped with the 6072 Single-Digit DTMF/Dial Decoder module, the dispatcher or other key personnel can selectively signal up to 11 separate groups of stations through use of auxiliary connector J5 on the System's common equipment shelf. This feature permits the dispatcher to call only the crew members required for that particular emergency. For example, paramedic teams can be assigned to one group, firemen to another group, other emergency crew members to the third group, and so on. A basic two-group selective-signaling arrangement can also be provided by the 292R System. In this application, the auxiliary connector is again used. For additional information regarding this or other selective signaling features, please contact Tellabs' Application Engineering Group at your Tellabs Regional Office or our U.S. or Canadian Headquarters. Telephone numbers are listed in paragraph 5.02.

System options for automatic conferencing only

Note: These options are not available for the automatic conferencing mode in combined automatic and manual conferencing arrangements.

3.34 Transfer Switch. In automatic conferencing arrangements where two 9296 2Wire ARD Trunk Access Modules are used (as recommended), it is also strongly recommended that one conference telephone location (typically, the fire station) be supplied with a two-position switch (not provided with the System). This switch, depending on position, deactivates one 9296 or the other and busies out the associated connector circuit in the central office. This arrangement ensures that one 9296 is always available to initiate a conference because, if a conference is held up by a caller's failing to go on-hook (e.g., when abandoning a burning building), the responsible fireman need only set the switch to the other position to release the active 9296 (which drops the conference in progress) and to activate the other 9296 (which readies the System for future fire-reporting calls). If a means of transferring to the second 9296 were not available, a conference held up as described would be activated indefinitely and subsequent fire-reporting calls would not be able to be completed. Also, with only one 9296 active at a time, two simultaneous fire-reporting calls result in one being cut through and the other receiving busy tone, which are necessary System functions. If both 9296's were active at the same time, two simultaneous fire-reporting calls would result in both being connected to the conference, possibly creating confusion among both the callers and the firemen. If a transfer switch is not desirable, the 6072 module and an additional interface circuit (the auxiliary connector is the interface point) can provide the same switching capabilities remotely from any conference station. For additional information on this feature, please contact Tellabs' Application Engineering Group at your Tellabs Regional Office or our U.S. or Canadian Headquarters. Telephone numbers are listed in paragraph 5.02.

3.35 Trunk-Busy Lamps. Where two 9296 modules and a transfer switch are used, two trunk-busy lamps can be provided at the location of the transfer switch. These lamps provide a visible indication of which of the two 9296's is busy. Thus, a lamp lit for an abnormally long time indicates the possible failure of an originator to go on-hook after placing a fire-reporting call and the resultant need to activate the transfer switch. Each lamp requires one lead; a common ground is used for both.

System options for manual conferencing and for manual mode in combined automatic and manual conferencing

3.36 Maintenance of Conference. In the manual conferencing mode and in the manual mode of combined automatic and manual conferencing, a switch on the 9293 2Wire ARD Conference Originate Line Circuit Module determines how a conference call is to be terminated. With this switch in one position, a conference is held up as long as any conference station remains off-hook. With the switch in the other position, a conference is held up only as long as the master station (or conference-originating telephone at a key location if two or

more key locations are used instead of a master location) remains off-hook.

mounting and powering

3.37 The 292R System is designed for central-office or PBX-equipment-room location and, by virtue of the prewired Type 10 Shelves that are supplied as part of its Mounting Assembly, mounts in either a 19-inch or 23-inch relay rack. In its maximum configuration (60 stations and 7 shelves), the System occupies only 42.75 inches of vertical rack space. The System is powered from -42 to -56Vdc central-office battery or from an optional nominal -48Vdc power supply.

4. system specifications

system capacity

60 conference stations; 3 remote answer access lines;
2 access lines for either automatic, manual, or combined
automatic and manual access

ringing frequencies

3 frequencies to accommodate harmonic ringing

functional ringing arrangement

2 ringing subgroups per frequency (6 outputs total),
arranged as 3 ringing groups of 2 subgroups each (alternate
ringing is provided within the 3 ringing groups)

ringing interruption rate

1 second on, 1 second off, or continuous ringing
(switch-selectable)

ringing generator bias

grounded or battery-biased (switch-selectable)

ringing capability

up to 5 ringers can operate simultaneously from each
2wire station loop

2wire loops

2wire loop limit: 2000 ohms or office loop limit, whichever
is less

longitudinal balance: 60dB minimum, 200 to 4000Hz

power

input voltage: -42 to -56Vdc, filtered, positive-ground-referenced

input current: 3 amperes maximum (nominal) when idle;
13 amperes maximum (nominal) when busy

operating environment

32° to 122°F (0° to 50°C), humidity to 95%
(no condensation)

dimensions

(for 60-station System with 7 shelves, power supply, and
ringing generators)

42.75 inches (108.59cm) high

19 or 23 inches (48.26 or 58.42cm) wide

9.94 inches (25.25cm) deep

weight

each fully loaded common shelf: approximately 20 pounds
(9.1kg)

each fully loaded station shelf: approximately 19 pounds
(8.6kg)

5. warranty information

5.01 Tellabs warrants the 292R Conference/Alerting System to be free of defective components, workmanship, and design for a period of two years from the date of manufacture, when applied as outlined in our Practices, subject to handling and installation commensurate with industry standards for solid-state electronic equipment. If the 292R System does not prove to be free of defective components, workmanship, and design under these criteria, Tellabs will replace or repair it free of charge.

Note: *Warranty service does not include removal of permanent customer markings on the front panels of Tellabs modules, although an attempt will be made to do so. If a module must be marked defective, we recommend that it be done on a piece of tape or on a removable stick-on label.*

5.02 For additional information on the 292R System, please contact Tellabs Customer Service at your Tellabs Regional Office or at our Lisle, Illinois, or Mississauga, Ontario, Headquarters. Telephone numbers are as follows:

US central region: (312) 969-8800

US northeast region: (412) 787-7860

US southeast region: (305) 645-5888

US western region: (702) 827-3400

Lisle Headquarters: (312) 969-8800

Mississauga Headquarters: (416) 624-0052

6. FCC registration information

introduction

6.01 The Federal Communications Commission (FCC) has established through Part 68 of its Rules and Regulations that FCC-registered terminal equipment may be directly connected to the telephone network through standard plugs and jacks. This section documents the customer's responsibility to the serving telephone company when a Tellabs 292R Conference/Alerting System is connected to the terminal side of a PBX or to central office (CO) lines.

6.02 Table 1 lists those component modules of the 292R System relevant to FCC registration of the System because they derive access ports from the System to the telephone network. The information provided in table 1 about each module is part of the data that the customer must supply to the

module number	type service	service code	private line facility interface code	REN (ringer equivalence number)	USOC
819291	CO 2wire loop	not applicable	not applicable	0.0A	RJ71C
819296	CO 2wire loop	not applicable	not applicable	0.2A	RJ21X

table 1. FCC Registration information for 292R System modules

serving telephone company regarding installation of the 292R System. Paragraph 6.11 of this section contains two typical System equipment configurations with sample information tables incorporating the data in table 1.

connection arrangements

6.03 Registered terminal equipment may not be connected to coin lines or party lines.

6.04 Customers directly connecting this equipment to the telephone network shall, before such connection is made, give notice to the telephone company of the particular CO lines to which such connection is to be made, and shall provide to the telephone company the FCC Registration Number of this equipment. The customer shall also give notice to the telephone company upon final disconnection of this equipment from a particular line.

6.05 Customers directly connecting systems consisting of combinations of individually registered terminal equipment (e.g., a PBX, the 292R System, and telephone sets) shall, before such connection is made, provide to the telephone company the following information:

- a. For each line, the FCC Registration Numbers for all equipment dedicated to that line, the largest ringer equivalence to be presented to that line, and any information required for the compatible operation of this equipment with telephone company communications facilities (e.g., type of service required).
- b. A list of FCC Registration Numbers for equipment to be used in the system. (See sample tables in paragraph 6.11.)

installation requirements

6.06 The standard registered 292R System (including adapter cable and power supply) is considered a fully protected system. As such, all connections between the 292R System and the telephone network are to be made via fully protected premises wiring. Standard 292R Systems will typically be connected to a local PBX at the serving telephone company's demarcation point by means of an adapter cable less than 25 feet in length and terminated with a USOC RJ21X or RJ1C plug. This standard plug is then inserted into a telephone-company-supplied USOC connector, which should represent a registered port and be, in effect, fully protected premises wiring.

6.07 In order to comply with this requirement for fully protected premises wiring, the following restrictions in the placement of System modules within the 292R's common equipment shelf and station equipment shelf (or shelves) must be observed:

- a. Access ports in the System's **common equipment shelf** may be equipped with 819293 or 819296 modules to provide either CO service or service to local PBX stations. In no instance, however, may network lines (those providing CO service) and PBX lines be mixed within the common equipment shelf unless the wiring to

the terminal side of the PBX is installed under the unprotected premises wiring provision (Section 68.215) of FCC Part 68. The common equipment shelf is equipped with only one connector (USOC RJ21X) for access to the main distributing frame, and the additional wiring required to mix network lines and PBX lines in this shelf would violate FCC requirements for fully protected premises wiring, except as noted above.

b. Similarly, 819291 modules may be used in the System's **station equipment shelf** to derive network lines or local PBX lines. Again, network lines and PBX lines cannot be mixed in the same station equipment shelf because the additional wiring would violate FCC requirements. In this instance, however, both network lines and PBX lines can be accommodated if a separate station equipment shelf (or shelves) is dedicated for use with network lines alone and the remaining station equipment shelf (or shelves) is dedicated for PBX lines alone.

incidence of harm

6.08 Should the registered equipment cause harm to the telephone network, the telephone company shall, where practicable, notify the customer that a temporary discontinuance of service may be required; however, where prior notice is not practicable, the telephone company may temporarily discontinue service forthwith, if such action is reasonable under the circumstances. If the telephone company temporarily discontinues service, the customer must be promptly notified of the discontinuance. The customer must also be provided with an opportunity to correct the problem that caused the discontinuance, and the customer must be informed of the right to bring a complaint to the FCC.

6.09 When trouble is experienced, the customer shall disconnect the registered equipment from the telephone line to determine if the registered equipment is malfunctioning. If the registered equipment is malfunctioning, the use of such equipment shall be discontinued until the problem has been corrected. No repair work (other than those routine troubleshooting procedures prescribed in the Tellabs 292R System Installation Practice, section 81292R-2) is authorized to be performed by the user. Part 68 of the FCC Rules prescribes that all repairs of registered equipment be made by the manufacturer or his authorized agent.

6.10 The telephone company may make changes to its communications facilities, equipment, operations or procedures, where such action is reasonably required in the operation of its business and is not inconsistent with the rules and regulations of Part 68. If such changes can be reasonably expected to render any customer's terminal equipment incompatible with telephone company communications facilities, or require modification or alteration of such terminal equipment, or otherwise

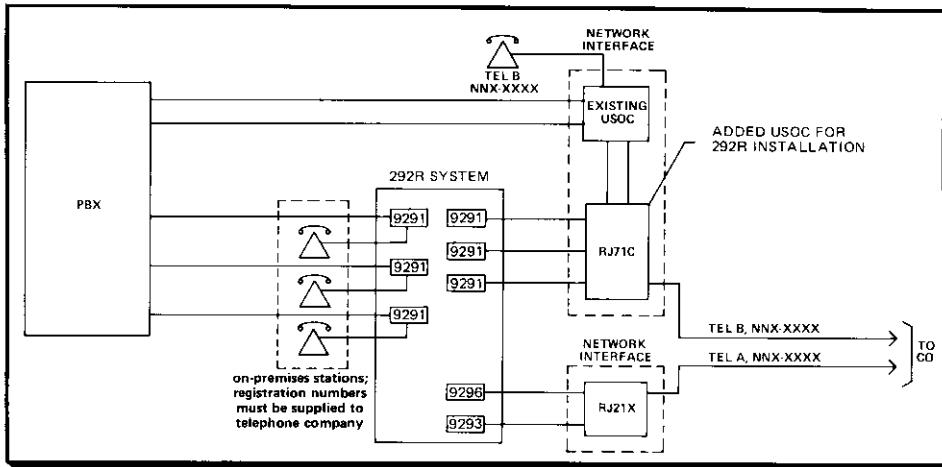


figure 5. Typical 292R System equipment arrangement (with CO lines)

information supplied to telephone company for 292R System (FCC Registration Number BPX826-68172-KF-N)								
circuit ID	type of service	service code		private line facility code	REN (ringer equivalence number)	USOC	circuit number cable pair (T, R)	required registration numbers
		PBX	292R					
tel B NNX-XXXX	2W loop	not ap.	not ap.	not ap.	not ap.	292R-0.0A tel set-1.0A (typical)	RJ71C	3 (30, 31 in; 5, 6 out)
tel A NNX-XXXX	2W loop	not ap.	not ap.	not ap.	not ap.	0.2A	RJ21X	1 (26, 1)
on-premises stations	not applicable							PBX and tel set

table 2. Sample information table for 292R System configured as shown in figure 5.

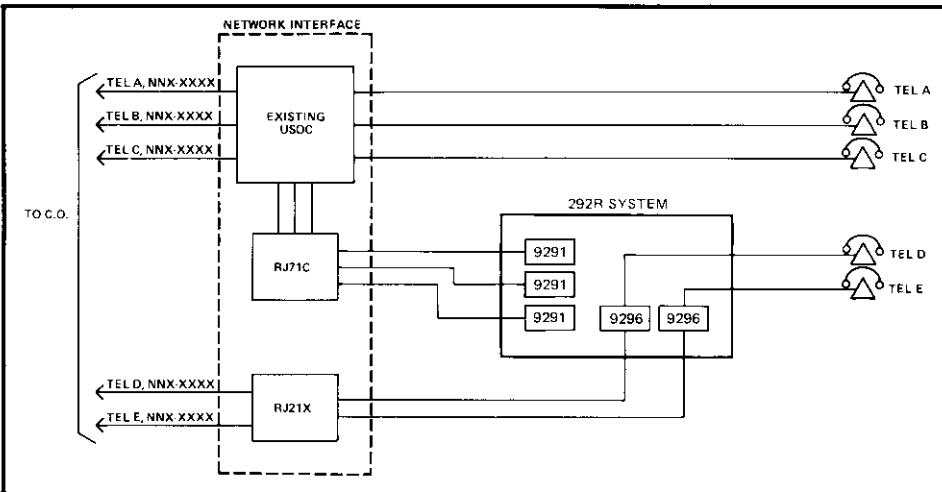


figure 6. Typical 292R System equipment arrangement (centrex application)

information supplied to telephone company for 292R System (FCC Registration Number BPX826-68172-KF-N)					
circuit ID	type of service	REN (ringer equivalence number)	USOC	circuit number cable pair (T,R)	required registration numbers
TEL A NNX-XXXX	2W loop	292R - 0.0A tel set - 1.0A (typical)	RJ71C	1 (26, 27 in; 1, 2 out)	292R and tel set
TEL B NNX-XXXX	2W loop	292R - 0.0A tel set - 1.0A (typical)	RJ71C	2 (28, 29 in; 3, 4 out)	292R and tel set
TEL C NNX-XXXX	2W loop	292R - 0.0A tel set - 1.0A (typical)	RJ71C	3 (30, 31 in; 5, 6 out)	292R and tel set
TEL D NNX-XXXX	2W loop	292R - 0.2A tel set - 1.0A (typical)	RJ21X	1 (26, 1)	292R and tel set
TEL E NNX-XXXX	2W loop	292R - 0.2A tel set - 1.0A (typical)	RJ21X	2 (27, 2)	292R and tel set

table 3. Sample information table for 292R System configured as shown in figure 6

materially affect its use or performance, the customer shall be given adequate notice in writing, to allow the customer an opportunity to maintain uninterrupted service.

typical configurations and sample information tables

6.11 Figures 5 and 6 in this section show typical 292R System equipment configurations, while tables 2 and 3 provide a sample information table for each. These sample tables are representative of the information that the customer must supply to the serving telephone company in regard to installation of registered 292R Systems. Be aware that it is the responsibility of the customer at the time USOC's are ordered to specify the sequence in which CO lines are to be connected. The serving telephone company will consecutively wire these lines without skipping any jack positions.