



Meter Operations Division  
 1900 Rice Street  
 Saint Paul, MN 55113-6810

Phone: (651) 266-6850  
 Fax: (651) 266-6857

### FACSIMILE COVER SHEET

Date: April 18 Total Pages Including Cover Sheet: 11

**PLEASE DELIVER TO:**

Name/Title: Rev. Mary Jane Duchene  
 Company: DDA  
 Fax: 651-457-4376

**FROM:**

Name/Title: Jerome Ludden  
 Phone: 266-6853

**REMARKS:**



## BOARD OF WATER COMMISSIONERS

*President: Patrick Harris ♦ Vice President: John Zanmiller*

*Commissioners: Matt Anfang ♦ Bob Cardinal ♦ Gregory Kleindl ♦ Debbie Montgomery ♦ Dave Thune*

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April 18, 2006

Re: 697 Surrey Ave

St. Paul Regional Water Services needs to gain access to the metering equipment at 697 Surrey Ave owned by Ms. Sharon Anderson. We will replace the meter and reading equipment, owned by the St. Paul Regional Water Services Board of Water Commissioners, at this property at no cost to Ms. Anderson. The technician who will be replacing the equipment is an employee of the Board of Water Commissioners and will not be enforcing codes that are not covered under the St. Paul Regional Water Services Board of Water Commissioners. Barring any complications with Ms. Anderson's plumbing, this service should take no longer than one-hour to complete.

Thank you for your cooperation.

Jerome A. Ludden  
 Meter Operations Supervisor  
 St. Paul Regional Water Services  
 1900 Rice St. St. Paul Mn 55113

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### SAINT PAUL REGIONAL WATER SERVICES

Stephen P. Schneider, General Manager  
 1900 Rice St. Saint Paul MN 55113-6810 ♦ TTY: 651-266-6299

*Saint Paul Regional Water Services provides quality water services to the following cities:*  
 Arden Hills-Falcon Heights-Lauderdale-Little Canada-Maplewood-Mendota-Mendota Heights-Roseville-Saint Paul-West St. Paul

UB56 I  
ACCT NO  
SZ:58 DIALS:

\*\*\* METER COMMENTS \*\*\*  
4256 1 ADDR 697 SURREY AVE  
MTR #:TR29948373 RDG TYPE: A LOC: L

4256

01					
02	011306	OPEN CIRCUIT RDG			
03	101905	OPEN CIRCUIT RDG			
04	040805	OPEN CIRCUIT RDG			
05					
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091-  
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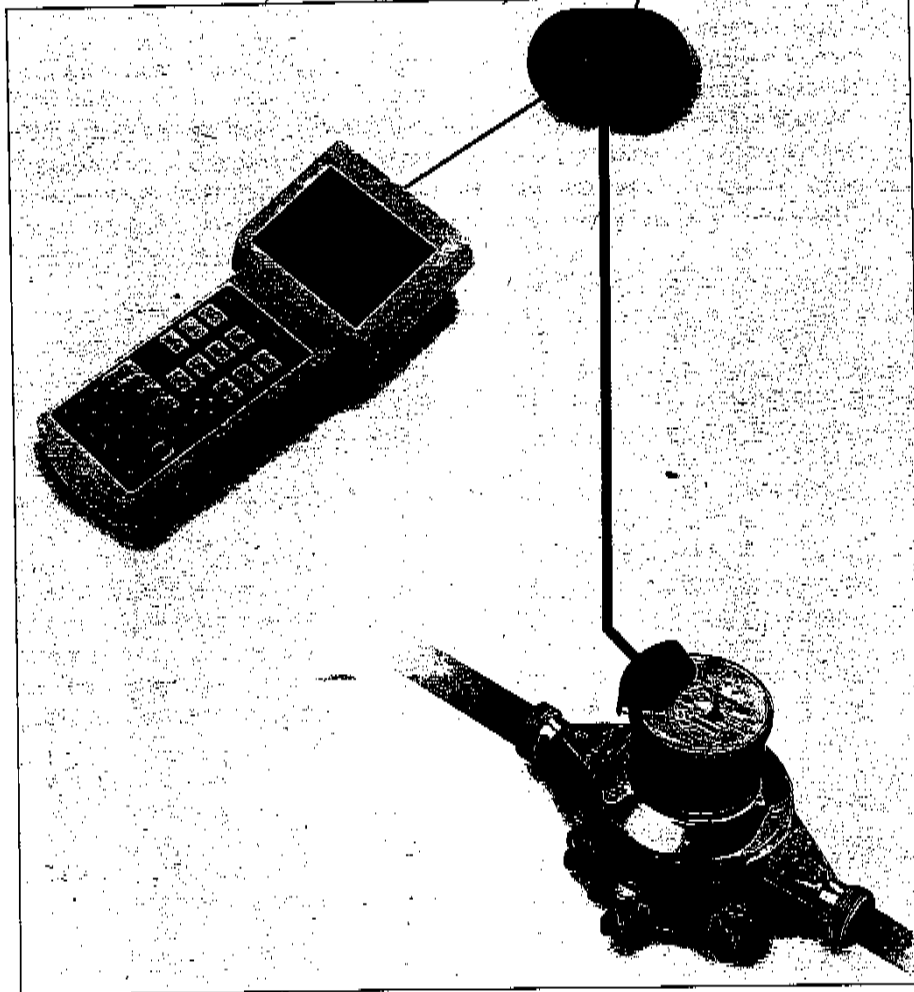
*These are the readings SPRWS Meter Readers have been collecting. Ms. Anderson has given us a reading of 0920 [92] as of 3/21/06*

00  
71  
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INQUIRY COMPLETED

04/13/06 08:09:33 X

*From-AWWA m6 Water Meters -* REMOTE REGISTRATION 111  
*Selection, Installation, Testing and Maintenance*



The meter reader carries an encoding recorder which stores the meter reading from the remote touch pad. The reading can, if preferred, also be shown as a readout.

Figure 9-2 Typical remote encoding meter-reading system

into a joint venture with a specialist in the field to build a unit for them. Recorder companies who are interested in sharing a portion of this rapidly growing market are also introducing recorders independently from the meter manufacturers. They are sold along with custom programming that allows the utility to download the data directly into their billing computer. The introduction of this equipment has opened up the competitive market to high technology companies outside the manufacturers control and improved the competition for the recorder share of the market.

Encoder meter-reading devices have been introduced that have the ability to communicate with several different types of encoders made by different manufacturers. The utility industry has needed this equipment for many years, because some utilities, such as investor owned or private utilities, are prohibited from using single vendor items by their own boards or by the Public Utility Commissions. Also, many utilities do not feel comfortable with their ability to maintain competitive bidding under a single vendor system. However, with the evolution of these devices the market is becoming more competitive.

Schlumberger

# Neptune<sup>®</sup> ARB<sup>®</sup> V

## Automatic Reading and Billing System

### Performance

The ARB encoder register and remote receptacle together provide the meter reading and the location identification number. When the system is interrogated by the reading equipment, this data is captured in solid-state memory. After completion of the daily readings, the data is unloaded into a microcomputer for electronic transfer to the utility's billing system.

As the basic component of the total ARB System, a meter equipped with the ARB encoder register and remote receptacle is the first step toward a totally automated reading and billing process. Complete meter reading solutions, including radio transmission and telephone AMR, are available for the ARB encoder.

ARB's "total system" concept means more meter readings per day, automated bill preparation, and shortened billing cycles for improved cash flow.

### Features and Benefits

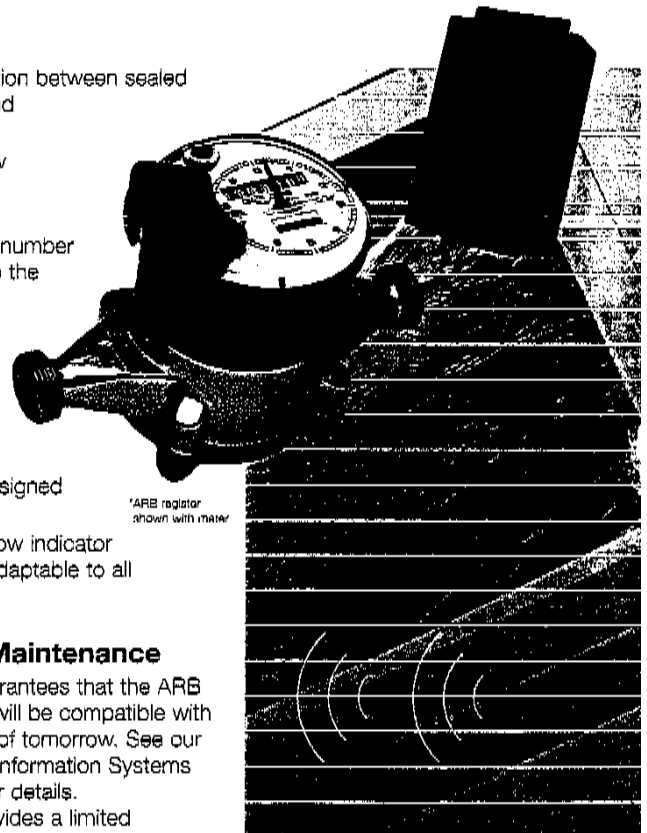
- Automates the remote reading of meters and the calculation of water bills
- Shortens billing cycle, improves cash flow, eliminates lockouts and callbacks
- Eliminates synchronization problems between inside and outside registers by "reading itself," transmitting the actual reading as displayed on the register odometer
- Six wheel encoding option allows for more precise reading of meter

- Three-wire connection between sealed encoder register and remote receptacle
- Top mounted screw terminals for easy installation
- Customer account number is programmed into the receptacle by field personnel and may be changed as necessary
- Tamper-resistant receptacle is unobtrusive and designed for easy installation
- Register with low flow indicator and receptacle is adaptable to all Neptune meters

### Warranty and Maintenance

Schlumberger guarantees that the ARB you purchase today will be compatible with our reading systems of tomorrow. See our "Meter and Reading Information Systems Guarantee" for further details.

Schlumberger provides a limited warranty with respect to its ARB V System for performance, materials, and workmanship. Schlumberger further offers an optional post-warranty maintenance program for extended factory service.



Metering  
Systems

Schlumberger

**Specifications**

**Materials**

Encoder register housing – Polycarbonate  
 Remote receptacles – ABS  
 Electrical contacts – Gold over nickel plated copper  
 Connecting wire – 3-lead #22 AWG

**Range**

Up to 500'

**Options**

**Sizes**

Available for all sizes of Neptune® T-10's, HP Turbines, Tru/Flo™ Compounds, HP Fire Service Meters and Reclaim.

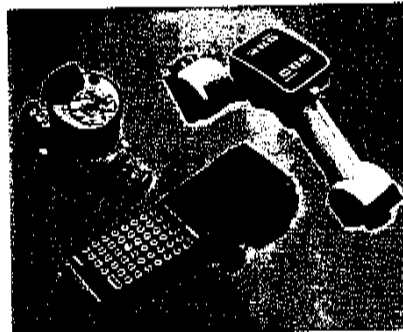
**Electronic Accessory Equipment**

ADVANCE<sup>2</sup> with ARB V Adapter  
 Advantage®  
 MAPS® Systems

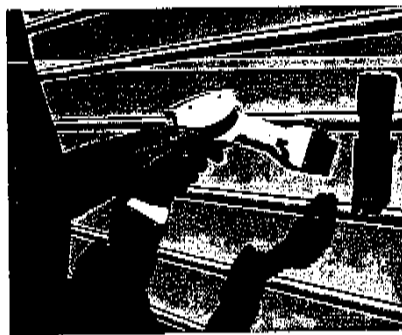
**Units of Measure**

U.S. Gallons      Cubic Feet  
 Imperial Gallons      Cubic Metres

MAPS Handheld with Advantage Probe



Guaranteed compatibility



Registration and Register Capacity: 4 and 6-wheel encoded odometers

Meter Size	Gallons (U.S. & Imperial)		Cubic Feet (ft <sup>3</sup> )		Cubic Metres (m <sup>3</sup> )	
5/8", 3/4", 1"	9999	0	9999		9999	
1 1/2"	9999	00	9999	0	9999	
2", 3", 4"	9999	00	9999	0	9999	
6", 8", 10", 12"	9999	000	9999	00	9999	0
16", 20"	9999	0000	9999	000	9999	00
	4-wheel		2-wheel		4-wheel	

Some other special resolutions available upon request.

For more free information by fax, call Schlumberger Water Division, FAX-BACK System: 1-800-823-4417 and select the document you wish to order.

**Customer Service/  
 Direct to Factory**  
 1600 Alabama Highway 229  
 Tallahassee, AL 36073  
 Toll Free 1-800-645-1892  
 FAX (334) 283-7434  
 Customer Service E-mail:  
 trident\_order@slb.com  
 Customer Support E-mail:  
 trident\_support@slb.com

Your Local Schlumberger Representative:

**International Sales**  
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 FAX (334) 283-7299

ARB V 1/98  
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Visit our web site at: [www.slb.com/water/water.htm](http://www.slb.com/water/water.htm)

## HISTORY OF THE NEPTUNE ARB SYSTEM

1964	Neptune introduced the first encoded meter and meter reading system.
1965	The first complete telephone meter reading system by a water meter company was demonstrated at the AWWA National Convention.
1978	Neptune introduced CMOS electronics in the encoded register.
1980	Commercial central meter reading systems were introduced at the AWWA National Convention.
1985	Neptune Information Systems was created to develop and promote Central Meter Reading.
1987	The Unigun System was introduced featuring the only unitized data collection device.
1990	Schlumberger introduced E2 electronics and inductive read capability with the encoder register.
1994	Schlumberger incorporates Telecoder electronics for telephone meter reading into new ARB register design.
1996	Schlumberger introduces <b>Advantage</b> as a streamlined method of reading both ARB and ProRead registers.

# SPECIFICATIONS FOR AN AUTOMATED - ENCODER BASED METER READING SYSTEM

It is the preference of the utility to obtain an encoder based remote metering system capable of providing digitally encoded meter information as described in the enclosed specification.

Specifications for the required cold water meters can be found in the enclosed documentation.

Proposals must be submitted with detailed information of the features and benefits to the utility to adequately evaluate the proposed system. Proposals without adequate information may not be considered.

## I. DESCRIPTION — GENERAL

These specifications cover a self-contained encoder register metering system designed to obtain remote simultaneous water meter registration directly from the register odometer. The metering information shall be obtained through a remotely located receptacle using a compatible data capture system.

### A. System Components

The above system shall be configured as follows:

1. Encoder meter register — Directly mounted, digitally encoded data stream. Batteries or pulses are not allowed.
2. Remotely mounted receptacle — Providing a communication link for the transmission of information from the register.
3. Data acquisition equipment with which the above components can be interrogated. Such equipment shall be configured in two types:
  - a. A device that captures information and displays it visually to confirm system installation and wiring test.
  - b. A device that is preprogrammed with route information and is capable of storing collected data in solid-state memory. This device shall also electronically transfer the data into the utility billing computer.

## II. ENCODER REGISTER UNIT

### A. Registration

1. The register shall provide a six-digit visual registration at the meter.
2. The unit shall, in a digital format, simultaneously encode the four or six most significant digits of the meter reading for transmission through the remotely located receptacle. (The most significant meter registration digits are defined as those digits on the register number wheels that denote the highest recorded values of water consumption.)
3. A quick indexing mechanism shall be employed which shall prevent ambiguous readings.
4. The register shall have a full test sweep hand dial divided into gradients of 1/10th of the units of registration. Register test rings shall be available for shop testing.
5. The units of registration shall be in cubic feet, U.S. gallons, or cubic metres. These units shall be clearly designated on the face of the register.



6. The month and year of manufacture shall appear on the face of the registers.
7. The register shall employ a leak detection indicator on the dial face.
8. Registers using pulse generation or conversion of pulses to digital output are not permitted. Batteries shall not be required.

#### B. Mechanical Construction

1. Materials used in the construction of the register shall be compatible with the normal water meter environment and with each other.
2. The unit shall possess a hermetic sonic weld seal and filled with a non-toxic, mineral oil to allow for moisture protection.
3. The register and mounting base shall be integral components and not allow for disassembly.
4. The register shall be attached to the meter case by a bayonet attachment. Fastening screws or nuts shall not be required. A synthetic polymer tamperproof seal pin shall be used to secure the register to the maincase. No special tools shall be required to remove the register.
5. The register shall be removable from the meter without disassembling the meter body and shall permit field installation and/or removal without taking the meter out of service.
6. Provision shall be made in the register for the use of seal wires to further secure the register and terminal port covers.

#### C. Electrical Construction

1. The materials employed for contacts and connectors shall inhibit corrosion and shall suffer minimal effect from environmental conditions to which they are exposed.
2. The number wheels used in the register assembly shall be provided with spring-type bifurcated metal contacts to ensure a high probability of information transmission.
3. Connection shall be made to the register by three screw-type terminals sonically inserted into the register top. Access to the terminals shall be available to all models of registers. A port cover shall be provided to cover the terminals after they have been wired.
4. Digitally formatted data transmitted from the register shall incorporate a checksum character to verify correction information transmission and integrity. Data errors shall be indicated by the reading equipment.

### III. REMOTE RECEPTACLE

#### A. Mechanical Construction

1. The construction of the device shall be such as to resist accidental, unauthorized access without need for seal wire.
2. The materials employed shall be corrosion resistant, resistant to ultraviolet degradation, unaffected by rain or condensation, and compatible with rugged service and long life.
3. The receptacle shall be constructed with a top-hinged cover having a snap-lock closure.
4. The assembly shall provide for field installation of any reprogrammable six-digit number through use of jumper wires supplied with the assembly. Construction shall be such that this six-digit number may be changed at any time without necessitating return or replacement of the original assembly.
5. The receptacle shall be mounted using two or three screws to be provided by the utility.

**B. Electrical Construction**

1. The device construction shall incorporate the function of a cable clamp or cable strain relief.
2. Device construction shall contain two or three screw-type terminals to enable connection to the wire from the encoder register.
3. Design of the unit shall be such that it provides for mechanical and electrical connection between the receptacle and interrogation equipment.

**IV. CABLE**

The connecting cable shall be of the three-wire conductor type in a sheath which shall be abrasion and moisture resistant. Each conductor shall be color coded: red, green and black.

**V. PORTABLE VISUAL DISPLAY UNIT**

- The unit shall be designed to provide an instantaneous visual reading of the four or six most significant digits of the meter encoder register through mechanical connection to the remote-mounted receptacle.

Activation of the visual display shall be automatic upon full insertion into the molded receptacle assembly. The meter reader shall not have to press a button to activate the meter reading process.

The unit shall also display the six-digit house I.D. or account number. A trigger switch shall be provided to allow for display of the receptacle identification number.

Materials employed in the design of the unit shall be corrosion resistant and compatible

5. The probe shall contain a memory circuit whereby the meter reading is placed into memory upon a one-half second insertion into the remote receptacle. The meter reading shall remain displayed until the probe is inserted into another receptacle. The probe need not remain in the receptacle for the reading to be visible.
6. The tester shall be supplied complete with battery charger.

#### VI. AUTOMATIC DATA ACQUISITION HANDHELD

The unit shall be designed to automatically capture and record the reading information into a preprogrammed account to record. All readings shall be recorded, monitored, dated and time stamped for uploading into the utility billing system. All devices shall conform to the "Specifications for a Handheld Meter Reading System" as detailed in the enclosed documents.

#### VII. EXPERIENCE

Each vendor shall have at least ten years of experience in manufacturing and designing encoder-type registers for meters and the necessary installation testing of reading equipment.

The vendor shall submit a brief Corporate Overview, recap of encoder manufacturing experience, and details of the features and benefits to the utility of the proposed system.

#### VIII. COMPATIBILITY

All encoder registers shall be adaptable to an Automatic Meter Reading system manufactured by the selected vendor and currently available in the market. A guarantee of encoder compatibility with the AMR system must also be provided upon request.

The vendor must provide information on system upgradeability to an AMR system at a future date and whether or not it is a direct manufacturer of such systems.

A reference list of utilities using the proposed encoder system that is read with handheld devices or AMR systems shall be provided upon request.