ViewPoint™ Remote Data Acquisition System

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**ViewPoint™ @ the Core of all 4 System Applications**

**Real-Time Personnel Dosimetry & Data Management**
- EPD and EPD Neutron Real-time Dosimeters
- Web-based ‘WebREMS’
- Dose Management System
- REMS Access Control System
- ViewPoint Personnel Telemetry System

**Area Monitoring**
- Comprehensive Radiation Detector Portfolio
- Fully Networkable & Wireless Compatible
- ViewPoint & RADIS Software System Hub

**Integrated Remote Monitoring**
- Centralization of Audio/Video & Radiation Monitoring Equipment
- ViewPoint Software System to link system together

**1st Responder/Environmental Monitoring**
- Environmental Sensor Monitors
- Real-time GPS and Mapping
- Remote Environmental Simulation

**Value for Customers through Efficiency & Cost Removal**

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Analyze • Detect • Measure • Control™
The Common ‘Thread’ of the 4 System Applications

The 4 System Applications always contain each of the following modules:

**Detectors**
- Thermo or 3rd Party
  - Real-time Dosimeters
  - Hand-Held Portables
  - Fixed Plant Instrumentation
  - \( \gamma, n, \) and air particulate area monitors
  - 3rd Party sensors (competitive, GPS, other)

**Network Capability**
- Wireless and/or LAN
  - Utilize latest industry technology platforms
  - Available in Wireless or Traditional ‘wired’ modes
  - Designs maximize system “uptime” or availability
  - Enhanced diagnostics
  - Security of software systems & data

**Software Systems & DataBases**
- Design allows for complete compatibility w/ other legacy software applications
- Real Time & Historical Applications
- Compatibility with 3rd Party Equipment
- Designs minimize network overheads

**1st Responder/Environmental Monitoring**

**Real-Time Personnel Dosimetry & Data Management**

**Area Monitoring**

**Integrated Remote Monitoring**

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**Real-Time Personnel Dosimetry & Data Management**

**1st Responder/Environmental Monitoring**

**Integrated Remote Monitoring**
Systems Philosophy

Wireless Telemetry

Telemetry Software
*ViewPoint*\textsuperscript{tm}

Application Database Systems
*RadIS*\textsuperscript{tm}

Sensors (EPDs, Physiological etc.)

Access Control
*webREMS*\textsuperscript{tm}

Hardware Systems
North American Sites Using Thermo Telemetry Hardware and/or TeleTrak S/w System

- Calvert Cliffs NPP
- Vermont Yankee NPP
- Millstone NPP
- Diablo Canyon NPP
- South Texas Project NPP
- Crystal River NPP
- Comanche Peak NPP
- Vogtle NPP
- Farley NPP
- Rancho Seco NPP
- Hatch NPP
- Salem/Hope Creek NPP
- Browns Ferry NPP
- Sequoyah NPP
- Cooper
- Fort Calhoun
- Exelon (Quad, Dresden, Oyster Creek, Limerick)
- TMI, Braidwood, Byron, Clinton, LaSalle, Peach Bottom)
- Pickering NPP
- Darlington NPP
- Bruce NPP
- Susquehanna NPP
- Watts Bar NPP
- US Navy: Norfolk Naval SY
- US Air Force (Brooks AFB)
- Oak Ridge DOE Site
- Savannah River DOE Site
- Hanford DOE Site
The Thermo “Systems” Model

Sensors
EPD's
AMS 4's
E600's
IPM's

Transmission
Wireless
(TeleTrak, UTx's, etc.)

Any Sensor!

Systems (Software)
REMS
TeleTrak
RADIS

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Analyze • Detect • Measure • Control™
Why Us????

- **Modular Design:** can incrementally add on, build as you go & use ONLY what you need;

- **Fast Response to Customer Requests for Compatibility:** design of *ViewPoint™* facilitates potential for rapid interface;

- **Scalable Design:** Design a system for your needs today; expansion capabilities for the future;

- **Customers can utilize invested capital**... Use what you have!!!! Supplement existing inventory of equipment with key new (Thermo) products to achieve desired functionality; “open the door” with minor solution….use as a ‘beachhead’ for future sales
Network Capability (Wired or Wireless)

NOW HAVE DIRECT CONNECTION CAPABILITY INTO LAN!
- EPD’s & other devices plug directly into network (wired);
- use ViewPoint™

Base & Data Engine Appliance
Value Drivers or Cost Savings realized by customers implementing the Thermo Wireless & ViewPoint™ System

- Reduce / eliminate cable pulls (engineering & labor, etc.)
- Less Contract HP personnel required to provide coverage of workers
- Reduced risk of over exposures/non-compliances = ↑ auditor ratings
- ↓ need for separate systems (Maintain 1 wireless system for (e.g. chemistry, maintenance,))
- Training Simulator (computerized 2-way tx of data to/from field) = ↓ resources for scenarios

$$\text{Savings}$$
The Technology

Data Engine
- Core Technology
- Supplies all data
- Transacts all data

Plug In
- Device Protocol Handler
- Interprets messages
- Device Identifier
- Data Assembler

PC Client
- User Interface
- Data display
The Technology

Data Engine

Plug In

Revolutionary Front Light Screen

Game Boy Advance

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Sensors or Inputs

Thermo or 3rd Party Detectors & Sensors
New System Overview

Data Engine

- New Appliance
- Teletrak Server
- Radis Client
- Plant Computer
- Win WRM
- WRM
- RMS
- Plug-Ins
- Thermo
- MGPI
- Non-Rad
- H. Stress/Vibration
- Plug-Ins
- Radnet
- Bartlett
- RMS
- RADS
- Plug-In
- Video
- Audio

Viewpoint Console

Oracle Database 1
SQL Database 2
**ViewPoint™ System Overview …the Game Boy Analogy!!**

**ViewPoint™ Features**

- Next Generation “TeleTrak” System
- Personnel & Area Monitoring
- Networkable
- Appliance–based System; links into Access Control Systems
- Modular Design
- Select 2-Way
- Fully scalable design

**Software Systems & Databases**

- Therm EPD’s
- Training Simulator Database
- Location (GPS, RFID)
- 3rd Party Sensors (MGP, etc.)

**ViewPoint™ Data Engine**
The View of Plug-Ins at the Moment ...

**Data Engine**
- Thermo EPD, EPDN, EPDN₂
- Thermo AMS4
- MG DMC
- MG AMP 50/100/200
- MG Telepole
- MG Mini Edgar
- MG APBM302
- RMS 3
- SAIC PDE4
- Rados
- Ludlum DT 375
- Thermo E600
- Thermo ASP 2
- GPS

**ViewPoint™ Client**
- Thermo PCM2B/IPM
- Thermo PM7
- Thermo Alpha 7
- Thermo SAM11
- Tritium Monitors
- Thermo SPM/TPM
- Heat Stress Shirt
- Panasonic Camera
Customer Builds Own Remote Monitoring System!!
7 liter, FHZ 671 Probe

7 liter probe
Gamma Probe
Applications

Bruce Power Station station would like to monitor 6 Thermo AMS-4 Cams wirelessly during their next outage.

ViewPoint™ Data Engine
Davis Besse nuclear station would like to monitor the control point fixed monitors.
Application

Central Command event team would like to continuously remotely monitor an emergency zone for Radiation and Chemical sources.

- Chemical Detection unit
- Single UTX
- First responders 1, 2, and 3
- ViewPoint™ Data Engine
- Single UTX
FLARE….WiFi System Overview

Command Base radio

ViewPoint server

Up to 2 miles line of sight

DR-100 Mote

RS-232 (19200)

Thermo E600

User Pack

DR-1000

GPS Uplink

User

DR-100 Mote

I/OA

Thermo EPD

DR-100 Mote

SPI

Lifeshirt

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Analyze • Detect • Measure • Control™
USAF ‘FLARE’ Project …WiFi ..no cables!

- Allows for Wireless Connections to ALL Sensors
- Applications for Hand-held portables, non-Rad’s up to 100’ distance
- Eliminates need for repeaters when multiple units in area …..people act as repeaters!
- Location when tied to GPS (outside) or RFID (inside)
Mobile Remote Monitoring

- Engine Response Unit
- Call Center / Command
- Engine Response Unit
- Support Teams
Additional Equipment via Wireless System

Fire Engine becomes central hub for the collection and retransmit to a remote operations facility.

GPS Equipped Mobile System accurately pinpoints readings of all equipment.
View Point Software (ViewPoint/ArcView)

GPS Tracking & Probes allow real-time monitoring & location of data
Large Nuclear Station System - EPA Controlled
PA DEP Remote Environmental System

Satellite Communication Link

Drop Probe

Personnel w/ Hand-held instruments

Drop Probe

Probe data over Satellite link
Truck/Comms data via Direct Way link
Truck/Comms's over satellite link
Truck/Comms's over THERMO Radio

RM&P (Atlanta) Hosting ViewPoint
Multiple Vehicle communications

- Thermo Wireless Systems on each vehicle
  - Provides support for each vehicle’s wireless needs
  - Each configuration can handle 64 devices
  - Personnel and device can ROAM in and out of any vehicle’s coverage area
  - Each vehicle becomes access point
Secondary Communications Path (Thermo EMS Satellite)

Vehicles communicate to each other from onboard satellite transceivers. Each vehicle is tunneled together for mirroring of data.
Thermo Matrix ESP Probe

- **Size:**
  - 13.25" x 8.25" x 15.87"

- **Weight:**
  - ~20lbs fully loaded

- **Power:**
  - Lithium Ion Battery, 24hr, 36hr, and 48hr operation options

- **Features:**
  - Rugged aluminum case
  - Side Panel Operational Indications
  - Test/Emergency Switch mode
  - Key switch On/Off
  - Water Tight Ethernet Connection
  - Water Tight Battery Charge connection
  - Sensitive Environmental Gamma Probe
  - GSM/cellular Modem option
  - Low center of gravity for balance
  - Handle/shoulder strap option
  - Simple parts repair/replacement
  - External power supply for charging
  - Simultaneous Thermo radio and Satellite communications
  - Smart Rollover communications technology
Mobile Van with Satellite + Wireless Comm’s
Interior of Mobile Van (PA DEP)
Message: Radiation Alarm
On Worker ID 168
John Cragg
1247 mRem/Hr
500 mRem

Cell Phone/Pager Notification Capability

Wireless Communications System

Notification Module

Thermo ViewPoint™ Software

Met Data  Plant Input  Bartlett RMS Canberra HIS 20

Worker with Telemetry or Fixed Radiation Monitor
On / Off

Personnel  Heat Stress  Pressure

EPD  AMS 4 Iodine/ Gas/ Partic.
New Viewpoint Features

- Graph multiple devices on a single graph:
- Select timescale for graph (similar to EMDS dose profile):
- Reorder columns (User selected order):
- Administrate any function of any device from anywhere (Client):
- Ability for system admin to build groups and propagate to clients:
- Storable views by group:
- Configurable views by User:
- Groups as tabs:
- Multiple instruments to be monitored in one group:
- Carry units with the device:
- Threshold value alarm needs to show on system view:
- System view controlled down to User level:
New Viewpoint Features

- More choices on calculations / Filters e.g. >=, and/or, *(all), like, contains:
- 2-way communications:
- Configurable security options - diff sites/diff req's - consider settings for Access Control when changed in Teletrak:
- Ability to do group call:
- Different types of alarms? & force alarm:
- User Report writing capability on all tables in system:
- Diagnostics: System to show base/repeater status - network design/monitoring display:
- Device routing and identification:
- ~20,000 devices / 4 sec. under current testing
Applications/Uses within the NPP & DOE Markets

- Remote, real-time coverage of personnel working on high dose/rate jobs; supplement and/or replace in-field technician coverage;
- Use in simple local, unlinked mode for personnel monitoring; also can link to access control for seamless log on/off access control;
- Real-time monitoring of high dose rate areas; supplement or replace traditional manual and ‘dose intensive’ form of obtaining radiation surveys;
- Real-time monitoring of other detectors/sensors (Thermo and/or 3rd Party).
4 Components of Proposed ViewPoint Pricing Model:

1. Data Engine
   - Hardware appliance with standard Viewpoint™ operating system loaded

2. User License
   - Number of users (security feature built-in to s/w to limit # of users)

3. Device/Plug-In Pricing
   - Number of devices
   - Device types

4. Maintenance Support Contracts
   - Standard
   - Extended
   - Upgraded
### Pricing Methodology (cont’d)

<table>
<thead>
<tr>
<th>Item #</th>
<th>Plug-In</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPDPLUG</td>
<td>EPD Mk.2 (1 bundle = 100 EPDs)</td>
<td>$5000 per bundle</td>
</tr>
<tr>
<td>EPDNPLUG</td>
<td>EPDN (1 bundle = 100 EPDNs)</td>
<td>$5000 per bundle</td>
</tr>
<tr>
<td>N2PLUG</td>
<td>EPDN2 (1 bundle = 100 EPDN2s)</td>
<td>$5000 per bundle</td>
</tr>
<tr>
<td>DMCPLUG</td>
<td>MGP DMC 90/100/2000 (1 bundle = 100 DMCs)</td>
<td>$3000 per bundle</td>
</tr>
<tr>
<td>AMPPLUG</td>
<td>MGP AMP 50/100/200 (1 bundle = 10 AMPs)</td>
<td>$3000 per bundle</td>
</tr>
<tr>
<td>TELEPLUG</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Pricing Examples for Chalk River

Example 1: Hot Cell

Site with up to 10 users and 2 total plug-ins (RMS 3s (5) + Canberra ICAM (5)), ViewPoint Client extended software maintenance contract

Step 1: Price Data Engine w/ 1 day of service
Step 2: Determine License Pricing
Step 3: Determine Plug-In Pricing based on # of devices/viewing client
Step 4: Determine S/W Maintenance Contract Pricing

Data Engine Pricing = $7,500
Licenses Pricing = $5,500 (5 View licenses)
Plug-In Pricing
  RMS 3 = ~$500/unit; $2500 for 5 units
  ICAM4 = ~$500/unit; $2500 for 5 units

Software Maintenance = 0.35 x ($18,000) ; $6,300
Total ViewPoint Pricing = $24,300

PLUS ANY ADDITIONAL WIRELESS HARDWARE REQUIRED
Example 2: Mo 99 Facility

Site with up to 10 RMS 3’s + 20 DMC2000’s

Data Engine Pricing = $7,500
Licenses Pricing (5 viewing) = $5,500
Plug-In Pricing
  DMC 2000= = ~$ 300/device; $6000 total
  RMS 3’s = = ~$500/device; $5000 total
Software Maintenance = 35% x system purchase price = $8400

Total ViewPoint Pricing = $32,400

PLUS ANY ADDITIONAL WIRELESS HARDWARE REQUIRED