

Marsh Canadian Nuclear Services Division

Offers a wide variety of Custom Products, System Integration, Design & Prototype Manufacturing as well as Field Service and Calibration / Accreditation Capabilities for both CANDU Nuclear Reactors in Canada as well as the Global Nuclear Market.

Other Products & Services:

- **Safety Shutdown System (SDS2)**
 - Designed, developed, qualified and manufactured safety shutdown system # 2 for CANDU reactor
- **Temperature Alarm & Logic Control (TALC)**
 - Designed, developed, qualified and manufactured temperature alarm and logic control system for the CANDU power house
- **PHT Pump Speed Control**
 - Designed, developed, qualified and manufactured primary heat transport pump speed monitoring and control
- **Watch Dog**
 - Designed, developed, qualified and manufactured a fail safe watchdog system for CANDU SDS
- **System Integration**
 - Custom designing, concept development, nuclear qualification and testing, SR&D of custom products for nuclear industry
- **Traceable Calibration Services**
 - ISO 17025 Accredited Calibration Services
 - ISO 9001 & 10012
- **QA Programs**
 - ISO 9001
 - ISO 10012
 - CSA Z 299.2 / N286
 - ISO 17025



For more information contact us: nuclearservices@marshinst.com

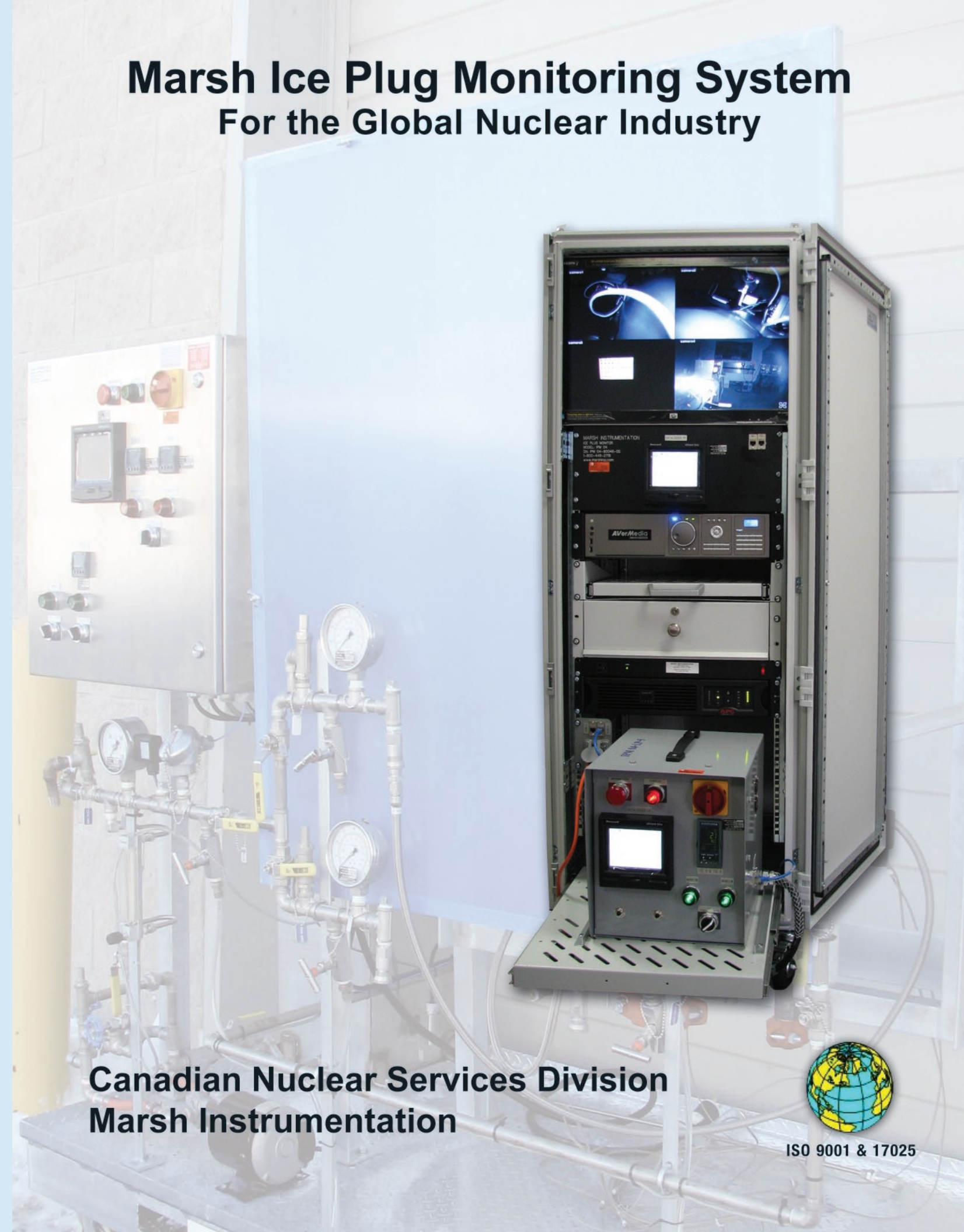
Canadian Nuclear Services Division

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Marsh Ice Plug Monitoring System For the Global Nuclear Industry



**Canadian Nuclear Services Division
Marsh Instrumentation**



ISO 9001 & 17025

Ice Plug Monitoring System

Ice plugs are a safe and an efficient method of providing isolation on liquid filled (water, heavy water) pipes to perform maintenance and repair works in the Nuclear industry. Ice plugs are formed by surrounding a pipe in liquid nitrogen (at -196.0°C) to freeze the contents of the pipe into a solid block that will prevent flow of the contents.

Why Remote Monitoring?

- Significant Reduction in Radiation Exposure
- Minimum Setup Time – Emergency Situation
- Improved Safety & Reliability
- Continuous Monitoring – 24 / 7
- Data & Video Analysis During & After Freeze
- Cost Savings - Reduced Labour to Setup, Monitor & Staff Training

IPM FEATURES

- Easy to use and setup
- Minimum Setup time
- Flexible & Mobile
- Temperature monitoring using thermocouples installed in various locations



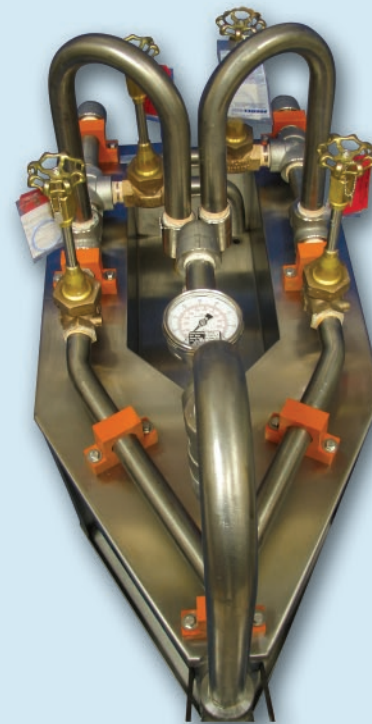
- Visual monitoring uses Colour / Infrared / Thermal imaging Cameras – Even in complete darkness
- Video and Electronic Data Recording up to 30+ days, 24/7
- Dual or Quad loop temperature controllers
- Remote Monitoring- Typical 250 ft, Optional 1000+ ft

- Stand alone Local Panel operation
- Optional Wireless communication between Local & Remote Panel
- Remote desktop monitoring from any where in the plant and though VPN



Ice Plug Freeze Jacket

- Single or Double vent, Double Wall Style Ice Plug Freeze Jackets
- All SS or aluminum construction using Cryogenic welding
- $\frac{1}{2}$ " to 14" pipe sizes
- Custom Sizes for Feeder Pipes



Liquid Nitrogen Manifold

- $\frac{1}{2}$ " to 2" size, SS Construction
- Two Independent LN2 Supply Sources
- Quick Disconnects
- Independent Pressure Relief
- Cryogenic Shutoff & Purge Valves
- Pressure & Flow Monitoring
- Compatible with IPM

Ice Plug Training & Test System

- SS Construction
- $\frac{1}{2}$ " to 14" Pipe Training & Testing
- 0 to 90° Pipe Angles
- Upto 150 PSI Test Pressure
- Injection Ports for Chemicals & Contaminations
- No-Tool Quick Disconnects
- Ice Plug Leak Rate Monitoring
- Colour Submersible Camera

