

# Fact Sheet

## U.S. Army Cold Regions Research and Engineering Laboratory Patents Awarded in CY 1995–1996

PATENT #	INVENTOR(S)	TITLE OF INVENTION	DESCRIPTION
5,609,418	Dr. Patrick Black	Clapeyron Thermometer	A high-resolution thermometer that employs the known thermodynamic pressure-temperature relationship of a solid-liquid mixture near its melting point.
5,601,906	Karen S. Henry	Geosynthetic Barrier to Prevent Wildlife Access to Contaminated Sediments	A barrier to deny wildlife access to contaminated sediments, while permitting gas formed in the sediment layer to escape.
5,567,078	Dr. James H. Lever, Gordon E. Gooch, and Edward P. Foltyn	Method for Forming a Sloped-Face Ice Control Structure	Slope-faced ice control elements, spaced across a riverbed adjacent to a floodplain region, are designed to arrest a breakup ice run and prevent flooding due to ice jams.
Pending	Michael R. Walsh and Dr. Vincent C. Janoo	Static and Dynamic Thermal Stress Measurement Device for Elastic or Viscoelastic Materials	An apparatus that can directly measure thermally induced stresses and strains on nonhomogeneous elastic or viscoelastic materials such as asphalt concrete under field conditions.
5,585,799	Dr. Norbert E. Yankielun and Michael G. Ferrick	A Microwave Doppler Radar System for Detection and Kinematic Measurements of River Ice	A system that detects river ice motion and measures the velocity of river ice to provide early warning of river ice runs for flood hazard or water resource assessment, regardless of visibility conditions.
Pending	Dr. Norbert E. Yankielun	Doppler Velocimeter for Monitoring Groundwater Flow	An apparatus and method for monitoring groundwater flow velocity and direction by using high-frequency acoustic signals and the frequency shift due to the Doppler effect.
Pending	F. Donald Haynes and Dr. John P. Zarling	Thermosyphon Vapor Control Device	A device that enables a thermosyphon heat transfer system to be effective even when the buried horizontal evaporator pipe is deformed by differential thawing, heaving, and soil settlement.
Pending	Dr. Norbert E. Yankielun and Stephen N. Flanders	Metallic Time-Domain Reflectometry Roof Moisture Sensor	An apparatus for detecting the presence, location, and extent of moisture in a roof using metallic time-domain reflectometry.

*(Continued on reverse)*



**US Army Corps  
of Engineers®**

Cold Regions Research &  
Engineering Laboratory

*(Continued from previous page)*

<b>PATENT #</b>	<b>INVENTOR(S)</b>	<b>TITLE OF INVENTION</b>	<b>DESCRIPTION</b>
Pending	Dr. Norbert E. Yankielun and Stephen N. Flanders	Roof Moisture Sensing System and Method for Determining Presence of Moisture in a Roof Structure	A roof moisture sensing system that uses a radio frequency pulse transmitter, a moisture sensor disposed on a roof, and a radio receiver adapted to monitor resonance of the moisture sensor activated by a pulse transmitted by the pulse transmitter.
Pending	George L. Blaisdell and Stephen N. Flanders	Ventilation Fan with Insulated Closure Mechanism	A ventilation fan for ventilating an enclosed space that is capable of providing sealing and insulation to an enclosure.
Pending	Jonathan A. Holmgren and Dr. Matthew Sturm	Snow Temperature and Depth Probe	An apparatus and method for accurately determining snow temperature at various depths below the surface of the snow down to the snow/ground interface.
Pending	Dr. Norbert E. Yankielun and Stephen N. Flanders	Capacitor for Water Leak Detection in Roofing Structures	A moisture-sensitive capacitor adapted to be used for water leak detection in roofing structures and other applications.
Pending	Dr. Norbert E. Yankielun and John J. Gagnon	Time-Domain Reflectometry System for Detecting Accretion of Frazil Ice on Water Intake Pipe Gratings	A reliable and economical time-domain reflectometry system for monitoring ice buildup on underwater intake gratings from a remote convenient location.
Pending	Dr. Jon E. Zufelt, Charles H. Clark, and Henry Harjes Jr.	Portable Battery-Operated Power-Managed Event Recorder and Interrogator System	A data acquisition apparatus for acquiring data of events denoted by switch openings. The system is intended for use in remote locations and includes a power management circuit for extended use.
Pending	Dr. Norbert E. Yankielun	System and Method for Detecting Frazil Ice on Underwater Gratings	A reliable and economical system for monitoring ice buildup on underwater intake gratings from a remote convenient location.
Pending	Jonathan A. Holmgren and Dr. Matthew Sturm	Self-Recording Snow Depth Probe	A snow probe device with a portable data logger that measures snow depths with minimal human effort and error.

**POINT OF CONTACT**

Sharon L. Borland  
603-646-4735  
Fax 603-646-4448  
sborland@crrel.usace.army.mil

**August 1997**