

DATES: Applications for an exclusive or partially exclusive license may be submitted at any time from the date of this notice. However, no exclusive or partially exclusive license shall be granted until December 26, 2003.

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SUPPLEMENTARY INFORMATION:

1. *Title:* Scour Sensor Assembly. An optical scour sensor monitors scour, including deposition and ablation, in bodies of water that may be too lossy to enable use of electrical signals. A specially configured optical fiber is inserted into the sediment and the interface between the sediment and water thereby monitored using a top-mounted control box to pulse light down the cable and capture reflected signals. The optical fiber may be armored by a soft plastic concentric shield and incorporate a micro-bend inducer for detecting minute indentations in the fiber. The presence of a non-liquid, *e.g.*, sediment, against the cable is detected because the sediment impinges on the fiber causing an indentation therein. At each indentation a reflection is sent back to the source. Using principles of optical time domain reflectometry (OTDR), the location of the indentation is determined. The data are fed to a remote system for processing, analysis and display.

Serial No.: 09/878,997.

Date: 6/13/2001.

2. *Title:* Pattern Detection Using the Bragg Effect at RF Frequencies. A system, and method of its use, provides for detecting patterns that exist within a geographic area due to the presence of an orderly array of objects. In a preferred embodiment, the system uses an irregular array of transceivers to illuminate an area suspected of containing a minefield. Typically, these minefields are arranged in an orderly arrangement. Exploiting the Bragg Effect, the transceivers, each configured as a surface wave radar, illuminate an area with RF energy that is scanned in carrier frequency within the HF band (3–30 MHz) at a pre-specified interval. At the frequency that corresponds to the Bragg Effect, a significantly increased signal level occurs that indicates the presence of a pattern such as one might expect from reflections from numerous objects arranged orderly. By processing these returns judiciously, the minefield's size, location, perimeter, and even the location of individual mines may be determined.

Serial No.: 60/245,2000.

Date: 11/3/2000.

3. *Title:* Detector and System for Indicating Pressure Change and

Methods of Use. An electronic detector configuration enables the accurate determination of pressure differences in scenarios in which conventional detectors and detector systems introduce inherent thermal inequalities at the interface with their immediate environs. A preferred embodiment of the present invention accurately measures snow water equivalent (SWE) while eliminating the need for fluid-filled pillows that contain environmentally hazardous fluids. By matching the thermal conductivity of surrounding soil to a detector configuration having an inherently low specific heat, it minimizes effects of differences in thermal conductivity at the snow/soil interface that cause SWE pressure sensor measurement errors. Further, it minimizes thermal effects by keeping soil moisture under the configuration approximately the same as that of surrounding soil. The system is environmentally friendly, has a small footprint, and is inexpensive to implement in arrays coupled to communicators suitable for any number of monitoring and warning functions such as snow avalanche and landslide early warning.

Serial No.: 10/211,582.

Date: 8/5/2002.

4. *Title:* Autonomous System and Method for Efficiently Collecting Fugitive Airborne Emissions From Open Vessels. An autonomous pushed liquid recirculation system (APLRS) is installed in a vessel, such as an electroplating tank. It situates around the interior perimeter and adjusts to changes in the level of liquid, maintaining the same location and orientation relative to the liquid's surface. It establishes a current near the surface that pushes liquid across the narrow horizontal dimension of the tank from a front wall to a rear wall. The current serves to push any bubbles resultant from operations within the tank to the rear wall. Over the rear wall is mounted an abbreviated exhaust hood covering only a short width of the surface of the tank along the rear wall. Because the exhaust system has to scavenge only a portion of the surface since all bubbles now burst along the rear wall, a much smaller air handling apparatus may be specified with an attendant savings in energy costs.

Serial No.: 10/224,232.

Date: 8/20/2002.

5. *Title:* Device and Method for Simulating Natural Cues so That Waterborne Fauna Avoid Manmade Barriers. The method of adding natural hydrodynamic cues to fish diversion screens similar to cues produced by the flow of water over rough, stream beds is

described. Fish detect the cues and avoid contacting or impinging on the screen surface in the same way that they avoid collision with natural features of stream channels. One design features that uses the method of adding natural cues is described. The feature consists of a series of rectangular plates that are attached to the u-clips beneath diversion screens that provide structural support to the individual bars that comprise the screen. The plates are oriented so that they are approximately perpendicular to the flow lines approaching the screen surface. The flow contacts the plates and, because the orientation of the plate creates an unstable hydraulic field, the flow alternately slips above and below the plates. This hydrodynamic oscillation extends above the screen surface and creates fluctuating local acceleration zones. These small-scale flow instabilities can be detected by fish prior to their contact with the screen surface and will cause the fish to navigate away from the screen surface without contacting the screen. Fish are guided by the signals generated by the screen reducing the danger of injury or death by collision with the screen surface or supporting structure.

Serial No.: 10/226,555.

Date: 8/20/2002.

6. *Title:* Bullet Trapping Medium and System. A backstop for decelerating and trapping projectiles generally includes a support structure having an inclined surface and a projectile trapping medium disposed on the inclined surface. The projectile trapping medium may be either a resilient granular ballistic medium or a combination of a ballistic medium with a hydrated super absorbent polymer (SAP) gel. Preferably, the support structure is made of a shock absorbing, foamed, fiber-reinforced concrete, such as SACON. In embodiments, the support structure also includes an enclosure. Additives may also be mixed into the projectile trapping medium to control alkalinity and prevent leaching of heavy metals.

Serial No.: 10/307,427.

Date: 12/2/2002.

7. *Title:* Methods and Devices for Optically Recording and Imaging Representations of Interactions of an Object With its Environment. Using an array of optical sensors affixed to measure interactions on a surface of an object, in combination with a specially configured personal computer, dynamic mapping of interaction is provided. One application maps washover of an object towed in a large body of water. Data are collected on optical characteristics of the interaction such as reflectivity at a boundary. For example, in one