Biomark R&D Pipeline and Novel Uses

PTAGIS IPTDS Sub-Committee Meeting



The Science of Healthier Animals®

Biomark R&D Pipeline

• IS1001-MUX

- Two units delivered, one completed in house for testing. Design is complete, awaiting board house lead time due to component procurement.
- Manual completion and testing protocol is underway.
- Updated IS1001
- Integration and future-proofing scope is under review.
- Integrate Ethernet, Bluetooth, gate out, increased memory, etc.
- New Master Controller
- Design and scope is complete. Production delayed indefinitely due to component shortages. Likely will need a slight redesign after looking at shortages and future-proofing scheme on the IS1001 reader.

• NEW HPR+

- Design completed. Twenty units inbound for in-house and customer testing. Component shortages delay full retail launch until Q4'23.
- 8mm Tag
- Nearing EOL, development of new mini chip. 2024 launch. 8.5mm long, will be marketed as 9mm.
- 9mm Tag
 - Developing new 9mm using APT improvements. In testing now. 9.5mm long, will be marketed as a 10mm.
- APT12
- New generation in discovery phase for performance improvements. Engineering claims a 10-15% improvement is possible. Mileage may vary.



NINA – Norway Floating (3) 6' Submersible Antennas

The customer used three 6' submersible antennas in a low energy/debris location to capture juvenile and adult passage.

Units are not synchronized. They do not cross talk or interfere with each other due to the idle time settings. The readers scan for 100ms and idle for 1000ms. They could theoretically overlap but this hasn't been an issue yet.





Zosel and Lebanon Dams

Standard HDPE pipe antenna with 1" standoff of aluminium sheet with FRP cover plates.

Zosel Dam has (6) 20' antennas. Read range is 20-22" in water. The main challenge is that the antennas trap shed tags.

Lebanon Dam will have (30) 10' antennas installed in September.





Statkraft Norway Floating System

Customer used (9) 10' floating skid antennas on three strings to improve juvenile detection.



Dual-Coil BP+

Integrates a small coil within the larger coil and includes a switch on the handle to change which coil is being powered.

Originally designed for tracking mussels. Once located with the larger coil the customer selects the smaller coil and pin points the location of the animal.

We have used and sold these for locating shed tags on IPTDS.

Uses an HPR+.





Light-Up Antennas for Fish Sorting Facilities

Cowlitz Salmon Hatchery Wand – On a car-wash style mobile arm.

Lewis River Hatchery Table – Cut through fiberglass table.

Merwin Sort Facility Table – On stainless steel.

Uses an IS1001 w/ gate-out board and 4-conductor exciter cable.







Bennington Dam

1" Low profile antenna on aluminium sheet.

Coil proximity to the aluminium shield reduces read range.



Fraser River Sturgeon Program

The Fraser River Sturgeon tagging program was initiated in 1999 by the Fraser River Sturgeon Society, in an effort to monitor and make recommendations to maintain the habitat and restore the sturgeon population.

The society is run by essentially all volunteers and fundraises to carry out studies to monitor the sturgeon populations.

Guides are given handheld readers and pre-loaded needles to scan and tag all White Sturgeon they catch. They relay tag and biological information into the program.





Site Uptime and VTT's

We look at "uptime" at a coarse level – over 24-hour periods. If the site or antenna is considered down, we look closer at status reports and attempt to remotely diagnose the issue. VTT's can be aborted by the IS1001 if there is noise on the antenna, especially spikey noise. The reader can misinterpret the noise as a tag in the field. The VTT is aborted to not miss real tags.

The logic tests:

- Was the power on for 13-hours or more? Site was UP/DOWN
- Did we collect data one time in the 24-hour period?
 Data Collection was UP/DOWN

Antennas/reader nodes are a bit more nuanced. This is where we use the VTT in addition to diagnostics and real tag detections to determine "uptime".

 An antenna is considered UP *if*:

 The current was within spec for more than half the 24-hour period AND
 The noise was within spec for more than half the 24-hour period OR
 The antenna was out of spec (either noise or current or both) AND
 There was (1) real tag detected in the 24-hour period AND/OR
 There were (12) or more VTT's detected

• An antenna is considered DOWN if:

The current or noise was out of spec for more than half the 24-hour period

AND

There were no real tag detections and <(12) VTT's detected for the 24-hour period





Merck Co., Inc. Tel: +1 360 561 0263 E-mail: kyle.meier@merck.com

