Teknologic Engineering Services has been developing receivers for the ***Juvenile Salmon Acoustic Telemetry System (JSATS)*** since 2002. Our receivers have been deployed in autonomous nodes, cabled arrays, integrated into a 3D tracking system, and used for tag verification during implantation and pre-release.

We recently developed a battery powered ***Autonomous Receiver (AR)*** meeting all of the requirements for the 2011 JSATS Grant County PUD study on the upper Columbia River between Wanapum and Priest Rapids dams. Data extraction is accomplished via an external connector on the electronics pressure vessel (PV). Opening the PV is not required. Extracted detection and sensor data readily imports into spreadsheets. Our design utilizes an easily replaceable battery pack.

Figure 1 – Teknologic JSATS Autonomous Receiver in high-visibility yellow

Physical Specification:

Diameter	6” diameter PVC pressure vessel
Length	52.5” pressure vessels including hydrophone
Weight (in air)	35 lb
Buoyancy	9.5 lb positive buoyancy in fresh water
Maximum operating depth	300 feet

Performance Specification:

Frequency Range	416.7 ±4.5 KHz (more than 6 kt Doppler tolerance)
Beam Pattern	Omni directional for all acoustic angles
Detection range	300-900’ typical in fresh water
Battery Type	Lithium 3.6V ‘D’ cells (4-32 cell pack)
Battery Life	7.5 to 60 day deployed life in increments of 7.5 days,, minimum 12 month storage life
Logging Memory	Minimum 2 Gigabyte SD Memory card
Telemetry	Acoustic modem or cabled system

Autonomous Receiver Features

The Teknologic AR is designed to operate as an independent bottom-anchored unit. Array spacing of 600’ have been used successfully in big river environments. Units are retrieved prior to battery depletion for extraction of data and for routine service. The AR detects and decodes received tag signals, recording the time the fish was detected and amplitude. Internal memory is large

enough to store considerably more than 60 days of detection data. Node depth, water temperature, and battery voltage are recorded several times per minute.

Our standard AR configuration includes an external USB telemetry interface for data extraction, and for assessment of node health at the deployment location.

We offer two additional options.

Cabled Telemetry - Units may be configured with an underwater cable telemetry system. This option allows units to be deployed long distances from a shore-based control unit that:

- ✓ *Extracts and logs data as a back-up to internal recording*
- ✓ *Transmits data to radio or Internet host system*
- ✓ *Provides continuous or short-duration power to extend battery life*

This option will allow one or more receivers in an installation to provide real-time data.

Acoustic Telemetry - Units may be configured with an acoustic telemetry option. This option will allow units to be interrogated by control units from shore or from a vessel that:

- ✓ *Extracts summary detection data*
- ✓ *Evaluates and reports on receiver health*

This option is a valuable feature for verifying receivers are in place and functioning between retrievals.

Figure 2 illustrates the typical rigging of a receiver. A ~180 lb clump weight made from sand filled burlap bags holds the node and the combined acoustic release and tagline canister to the river bottom.

For further information on pricing and options for JSATS receivers, please contact us at:

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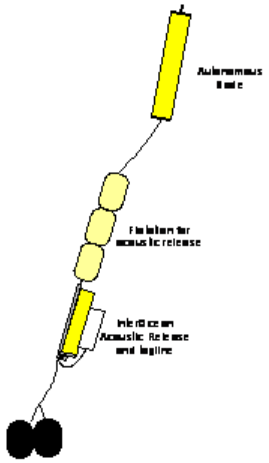

Figure 2 – Typical Installation