PIT Tag Information System
Columbia Basin

# Newsletter

**July 2016**
**Volume 14**
**Issue 1**

The PTAGIS Newsletter is published periodically by Pacific States Marine Fisheries Commission.

We welcome input from the PTAGIS community, so email us at ptagis_newsletter@ptagis.org with your story ideas.

If you have questions regarding the contents of this publication, or about the PTAGIS program, please contact PTAGIS Staff.

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A Fisheries Data Project of the Pacific States Marine Fisheries Commission

## IN THIS ISSUE

# P4 Tagging Software Coming Soon

**NICOLE TANCRETO** (PTAGIS Portland Office)

PTAGIS is happy to announce that a public release of the P4 Beta will be available soon. P4 has been in closed beta testing with a focus group since early December 2015. We are finishing up the new data loading processes that are required before P4 can be used to collect and submit live PIT tag data. We will be scheduling a field test with some users to collect live data once the data loading processes are implemented in production. The planned timeline is to release a beta version of P4 to everyone sometime in September.

P4 will be released with basic context-sensitive help integrated into the program. We will also conduct training sessions, likely by webinar, concurrent with the release of the public beta.


We have been working hard to make sure P4 can do everything that P3 can do, along with adding features that have been requested by the community. One of the big changes in P4 along those lines is that a P4 tagging session can now include records from fish tagged/released in multiple locations at different times. In fact, most of the related information collected at tagging can now be unique for each fish in the session. The only fields that hold the same information for all records in a session are: Project Code (aka Coordinator ID), File Name, Session Message, Session Note, and any session-level project fields you have defined.

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# P4 Tagging Software Coming Soon

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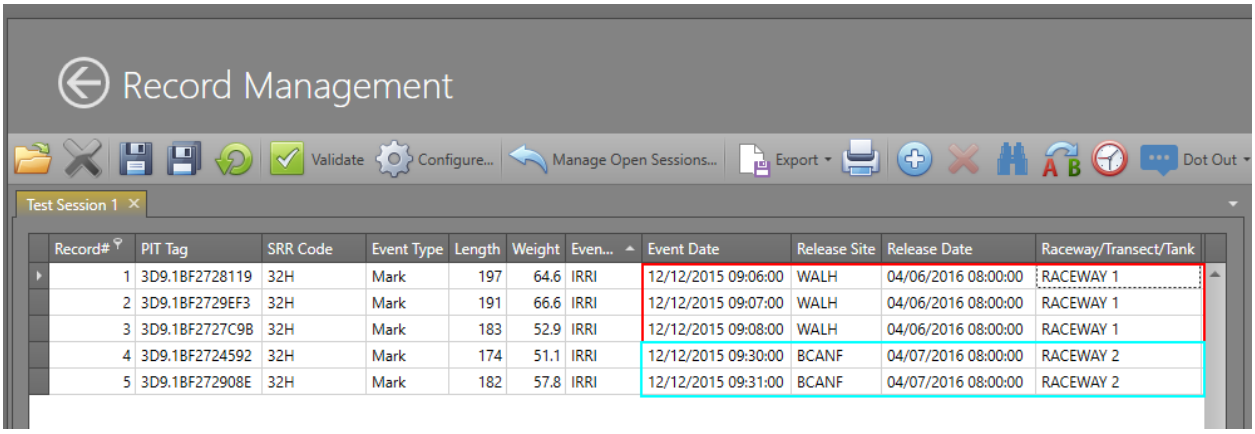
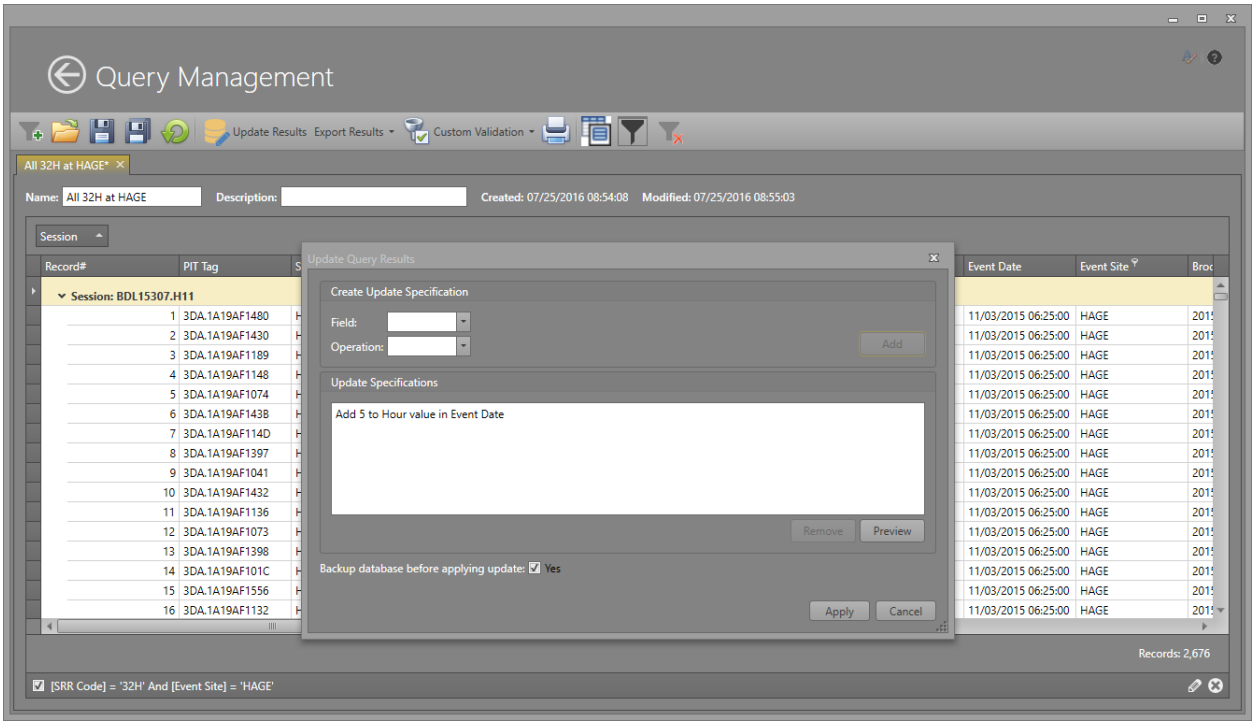



| Record# | PIT Tag | SRR Code | Event Type | Length | Weight | Even... | Event Date | Release Site | Release Date | Raceway/Transect/Tank |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3D9.1BF2728119 | 32H | Mark | 197 | 64.6 | IRRI | 12/12/2015 09:06:00 | WALH | 04/06/2016 08:00:00 | RACEWAY 1 |
| 2 | 3D9.1BF2729EF3 | 32H | Mark | 191 | 66.6 | IRRI | 12/12/2015 09:07:00 | WALH | 04/06/2016 08:00:00 | RACEWAY 1 |
| 3 | 3D9.1BF2727C9B | 32H | Mark | 183 | 52.9 | IRRI | 12/12/2015 09:08:00 | WALH | 04/06/2016 08:00:00 | RACEWAY 1 |
| 4 | 3D9.1BF2724592 | 32H | Mark | 174 | 51.1 | IRRI | 12/12/2015 09:30:00 | BCANF | 04/07/2016 08:00:00 | RACEWAY 2 |
| 5 | 3D9.1BF272908E | 32H | Mark | 182 | 57.8 | IRRI | 12/12/2015 09:31:00 | BCANF | 04/07/2016 08:00:00 | RACEWAY 2 |

For those that don't need to have unique information for each record, there are tools available to fill in the fields that will have the same values across all records. Repeating Values allow you to set the values that will go in each record as it is created, or can be used to complete information post-data collection.

P4 includes some powerful post-data collection management and QC tools. You can open multiple tag sessions at once, view each one in a tabular grid and make changes directly in that grid. These changes can be made in an individual cell or across many rows and/or columns. In addition, you can query the entire local P4 database to view, edit and/or export data across sessions. We also built a tool that allows you to adjust date and time values; for example, if all the Release Dates in a session are incorrect by 5 hours, you can add 5 hours to each release date value in the session to correct them.

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## P4 Tagging Software Coming Soon

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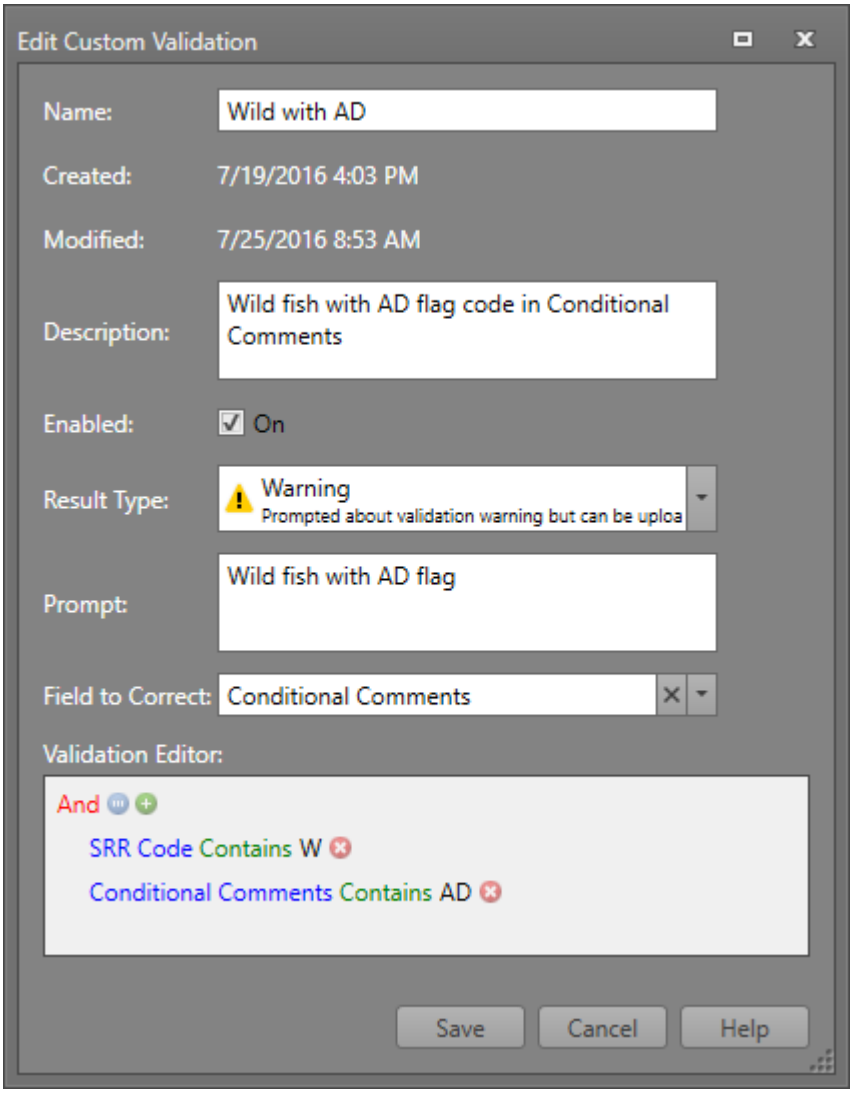
Users can extend the standard PTAGIS data validation with customizable routines to identify data entry issues more specific to a study. For example, you could check for records that are missing a value that is optional for PTAGIS, but required for your study, or look for flag codes in Conditional Comments that don't make much sense (e.g., AD flag on fish coded with Wild rear type).

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## P4 Tagging Software Coming Soon

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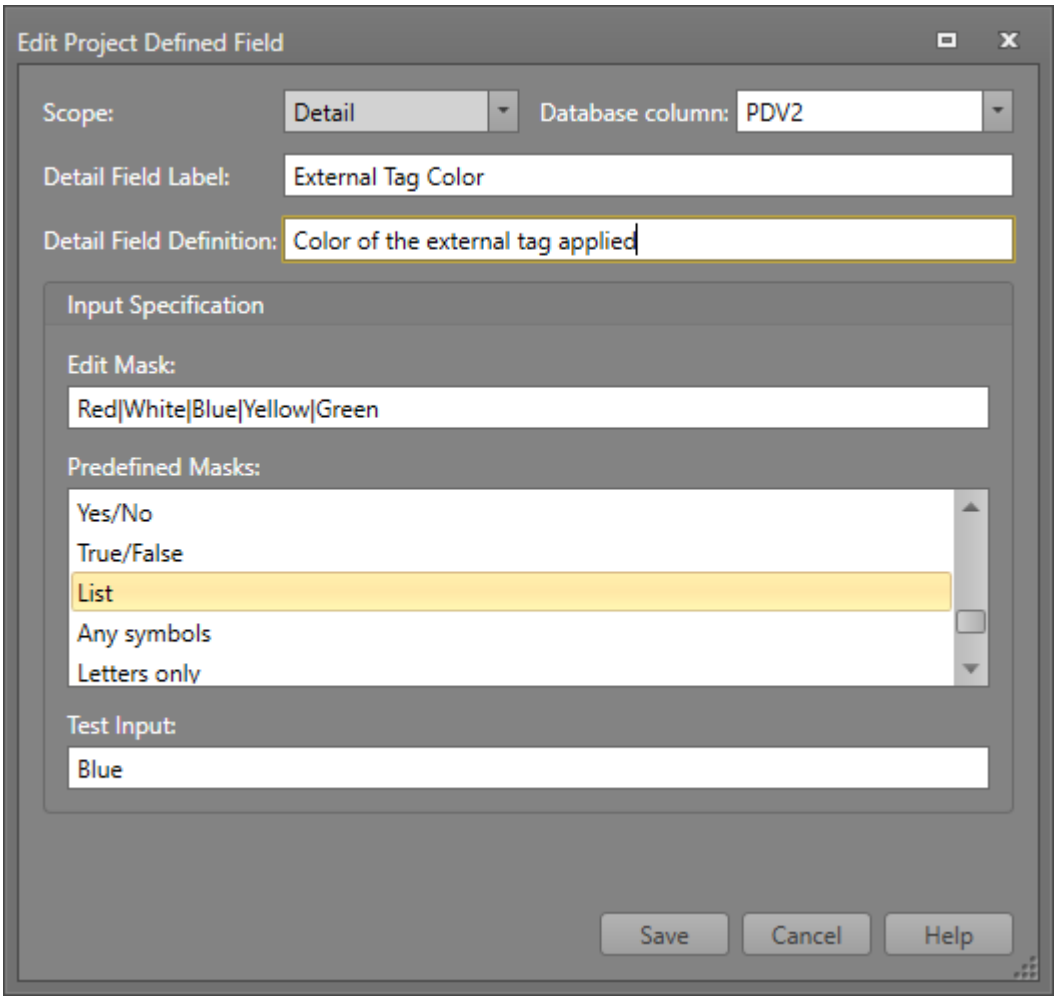
The features discussed in this article can also be used in conjunction with project defined fields. There are 10 session-level and 10 detail-level fields that can be defined for your project alone. The values in these fields will not be loaded into PTAGIS, but they can be queried in P4 alongside the PTAGIS standard fields and exported to Excel or CSV formats. When configured, these fields can have a data format to be enforced during data entry, which could even include a list of values.




We appreciate the efforts of the PIT Tag Steering Committee and the P4 focus group in helping us make sure P4 will meet the needs of the community now and into the future. A subsequent newsletter will announce the public beta release and provide additional information about upcoming training events. We'll continue to support P3 data collection and submissions to allow a smooth transition to P4 over the next year. Please contact us if you have any questions or concerns.

# Biomark IS1001 Update

**KIRSTYN MCKAY** (Biomark)

### Important firmware release (v1.6.0 24V and v2.6.0 12V).

The new firmware version is NOT backwards compatible with previous versions and requires a firmware update to the entire system.

Visit www.biomark.com and go to the Firmware and Applications page to download.

A list of added features and updates can be found in the IS1001-MTS Firmware Update v1.6.0 Release Notes file on the Biomark website.

Other necessary firmware updates/upgrades:

- IS1001-MC Application v1.6.0 firmware.
- IS1001-MC CBG v1.6.0 firmware.
- IS1001 Data Logger Application v1.6.0 firmware.
- IS1001 Data-Over-Power Application v1.2.1 firmware.

Contact Biomark for further information
customerservice@biomark.com
(208) 275-0011

# Website and Reporting System Updates

**NICOLE TANCRETO** (PTAGIS Kennewick Office)

We are moving to a quarterly maintenance and update schedule for the PTAGIS website and reporting system. Approximately once every three months, both the website and reporting system will be taken offline to perform routine maintenance and to implement updates to features. The next maintenance downtime is scheduled to be performed at the beginning of September, but will likely be moved up to the middle of August to support database changes that are necessary for releasing P4. The date will be announced on the PTAGIS home page as a News item. Recent updates to the website and reporting system are described below.

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# Website and Reporting System Updates

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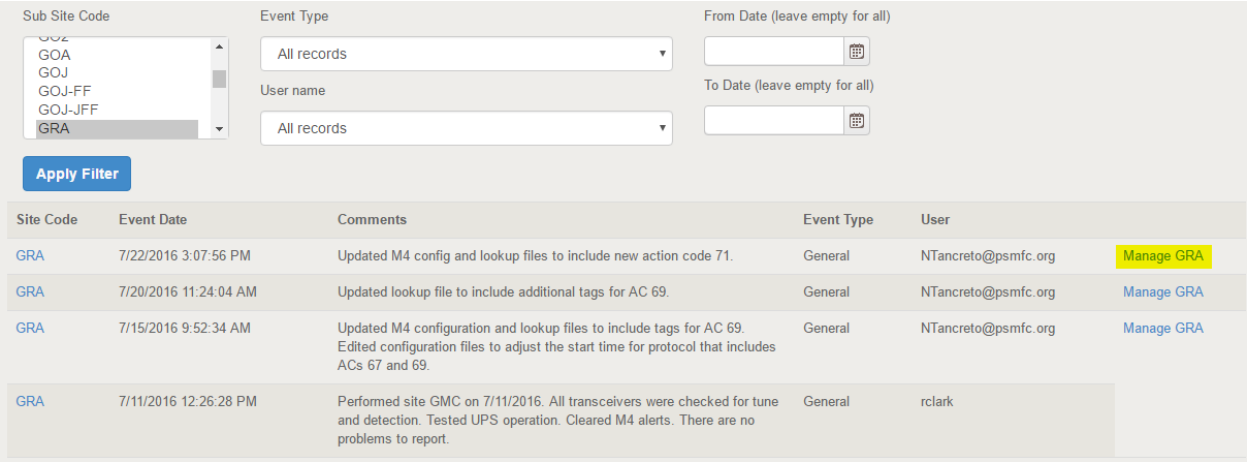
## Update to View/Edit/Delete Interrogation Site Event Logs

The tool to view interrogation site event logs has been updated with more filtering options and also now allows event logs to be edited or deleted by the user who originally posted them. To view event logs for a specific site, go to Services / View Event Logs, select the site in which you are interested from the **Sub Site Code** list box, and click **Apply Filter**. If you are logged in and have posted events for that site, you will see an additional link that allows you to edit or delete that specific post.




## Update to CSV and TXT Exports from Advanced Reporting

An update was made to Advanced Reporting to make exporting to text file formats consistent across the system and export methods with regards to using double-quotes around field values.

Whether the values in your export are surrounded with double-quotes depends on the export format that is selected:

| Double-Quotes Around Values | Export Format | Column Delimiter |
|---|---|---|
| Yes | CSV file format | Comma |
| No | Plain text | User defined |

## New Separation by Code Request System

In January of this year, a new system to request and view Separation by Code (SbyC) projects was implemented. To view the SbyC projects that were implemented in a specific calendar year, go to Services / Separation by Code. To view the details of the request, click the project title. If you visit this page while logged in, you will only be able to see any SbyC project requests you have created.

## Annual PIT Tag Steering Committee Meeting

**NICOLE TANCRETO** (PTAGIS Portland Office)

The annual PIT Tag Steering Committee Meeting was held February 10, 2016, in Portland. Topics discussed include:

- Review of 2015 PTAGIS accomplishments and plans for 2016
- Revision of PIT Tag Specification Document
- Update on Navy Beacon
- Biomark HPR Reader and new pre-loaded tags
- PIT Tag Solicitation
- Requests for PTAGIS to support genetic and scale data and research outside the Columbia River basin

Please visit the PTAGIS Meeting Notes library to view the complete set of notes from this, or previous, PTSC meetings. For more information about the PTAGIS 2015 accomplishments, please see the *2015 Annual Report*, available in the PTAGIS Document Library.

## Mark Leonard Joins the Kennewick Field Office

**DON WARF** (PTAGIS Kennewick Office)

The PTAGIS Kennewick Field Office is pleased to announce the hiring of Mark Leonard as a full time instrumentation technician. Mark is filling a vacancy created by the departure of Dan Meyer. Mark comes to us from an industrial automation environment that relies heavily on programmable logic controllers (PLCs). He's built a substantial and diverse set of skills including computer aided drafting. His primary responsibilities are to maintain the existing field instrumentation, design new controls, and write PLC programs for upcoming projects. We look forward to utilizing Mark's skills in designing the Separation by Code controls for the upcoming Lower Granite Juvenile Fish Facility remodel.

# PTAGIS Field Operations Maintenance Summary for Spring 2016

**DON WARF (PTAGIS KENNEWICK OFFICE)**

*John Day North Ladder*

## O&M Summary

Juvenile fish bypass facilities on the Snake and Columbia Rivers began operating around April 1st. Prior to this, the PTAGIS Kennewick staff performed all necessary preseason tuning and maintenance to ensure peak performance of the juvenile fish detection system and diversion equipment. Detection efficiency rates for 2016 are being kept at or above previous years. This is partly due to upgrading to FS2020 transceivers at critical locations. Separation by Code (SbyC) diversion efficiency rates remain high for 2016.

PTAGIS maintained facilities continue operating exclusively with the M4 interrogation software. The M4 application has been upgraded with remote buffer / timestamp download capabilities for the FS2020 transceivers. M4 SbyC performance continues to remain high with exceptional reliability.

Radio interference from the US Navy, Dixon California facility did not materialize in the first half of 2016 as it did in late 2015. A letter of concern to the Navy from the PIT Tag Steering Committee (PTSC) and PTAGIS may have helped to resolve this.

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# PTAGIS Field Operations Maintenance Summary for Spring 2016

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Adult ladder detection efficiency also remains high in dam-to-dam comparisons:

- **Adult Ladder Detection Efficiency**

| Ladder Site | Bracket Tags | Ladder Tags | Missed Tags | Percent Detected |
|---|---|---|---|---|
| BON | 4,855 | 4,851 | 4 | 99.9 |
| TDA | 15,345 | 15,296 | 49 | 99.7 |
| MCN | 8,606 | 8,579 | 27 | 99.7 |
| ICH | 8,477 | 8,410 | 67 | 99.2 |
| LMA | 7,953 | 7,896 | 57 | 99.3 |
| GOA | 7,912 | 7,835 | 77 | 99.0 |
| GRA | 1,820 | 1,815 | 5 | 99.7 |

| | |
|---|---|
| **Bracket Tags** | Number of tags detected both downstream and upstream of ladder site |
| **Ladder Tags** | Number of tags detected at bracket sites and ladder site |
| **Missed Tags** | Number of tags detected at bracket sites, but not detected at ladder site |
| **Percent Detected** | Percent of tags detected by ladder site |

| Site | Downstream Bracket Sites | Upstream Bracket Sites |
|---|---|---|
| **BON** | Fish released at COLR1, COLR2, COLR3, BONAFF | TD1, TD2, MC1, MC2 |
| **TDA** | BO1, BO2, BO3, BO4 | MC1, MC2 |
| **MCN** | TD1, TD2 | ICH, LMA, GOA, GRA |
| **ICH** | TD1, TD2, MC1, MC2 | LMA, GOA, GRA |
| **LMA** | TD1, TD2, MC1, MC2 | GOA, GRA |
| **GOA** | MC1, MC2, LMA | GRA |
| **GRA** | LMA, GOA | Sites with RKM > 522.173 and type |

Adult Ladder Detection Efficiencies

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# PTAGIS Field Operations Maintenance Summary for Spring 2016

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## Other PTAGIS Field Office Projects for 2016

- **Smart UPSs being installed at all Non-SbyC sites.**
  The Kennewick field office is in the process of installing high capacity UPSs at all Non-SbyC sites. As stated in the previous newsletter, all SbyC sites were previously upgraded with these devices and have proven to be very reliable and effective in circumventing power outages while providing long lasting power to all critical devices in the PIT tag rooms. These UPSs also incorporate network management cards that have the ability to send email alerts to PTAGIS when a power event occurs. This project should be complete in the fall of 2016.

- **John Day adult PIT tag detection.**
  PTAGIS is working with COE Portland district engineers to install PIT tag antennas in both ladders this winter. This will include two new PIT tag electronics rooms and eight antennas per ladder. The antennas will be arranged on two weir walls per ladder with four antennas per weir wall. Each weir wall will have two overflow antennas and two orifice antennas. The project is tentatively scheduled to become operational in March of 2017.

- **PTAGIS continues to repair failed transceivers in our Kennewick lab.**
  The aging FS1001, FS1001A and FS1001B transceivers are repaired in house and are projected to last, at a minimum, another 5 to 10 years. The yearly failure rate for these transceivers has not risen since they were initially installed in 2001.

- **PTAGIS continues to provide researchers with Separation by Code (SbyC) capabilities.**
  This work includes in-season ad-hoc requests from researchers to accommodate ongoing and new projects.

- **PTAGIS continues to refine facility controls.**
  This work includes updating the programmable logic controllers (PLCs) with refined programs based on requests from the USACE, NOAA, state and tribal site operators. PTAGIS designs, installs and operates these systems for site environmental monitoring, sampling and SbyC activities.

- **Bonneville Corner Collector (BCC).**
  The Biomark FS3001 transceiver continues to perform well. The transceiver is closely monitored by PTAGIS staff for any event that would indicate degraded performance. Any anomalies or significant performance issues observed are documented and passed on to the manufacturer to further assist in the development of the Lower Granite ogee detection system. The PTAGIS Kennewick Lab has also added a BCC antenna simulator that replicates the high amperages of the BCC antenna in a controlled environment. The simulator will be used to test new or repaired transceivers and new PIT tag models.

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# PTAGIS Field Operations Maintenance Summary for Spring 2016

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- **PTAGIS provides continuing technical support for Lower Granite Spillway PIT tag project.** PTAGIS involvement includes design reviews, performance testing of proposed antenna designs and transceiver functionality. PTAGIS field personnel continue to be actively involved in most aspects of this effort.

- **Lower Granite Dam Juvenile Bypass remodel.** PTAGIS O&M continues to provide technical assistance to the US Army Corps of Engineers Walla Walla District with regards to the construction and installation of three PIT tag antennas to be located on the new full flow transport flume. It is anticipated the full flow PIT tag antennas will be operational at the beginning of the 2017 out-migration.

*Lower Granite transport flume under construction. July 2015*

# Kennewick Field Office Cost Saving Efforts through Recycling and Innovation

**ROGER CLARK** (PTAGIS Kennewick Office)

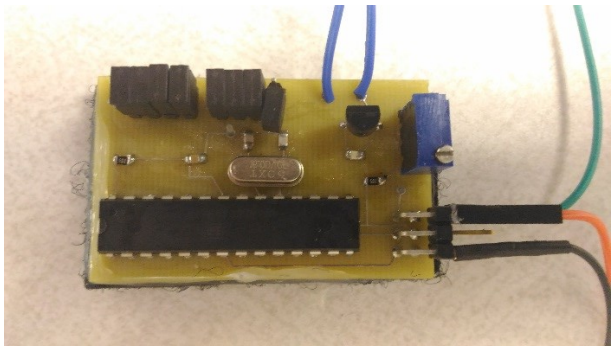
## Background

To reduce overall operating costs, the goal of the Kennewick Field Office has always been to recycle, repurpose and repair older equipment while developing labor savings electronic innovations. The following is a list of a few of these efforts.

## Legacy Transceiver Upgrades

1. FS1001 Virtual Timer Tag

   Due to the low stock of replacement timer tags and the high cost of having more produced, a virtual timer tag PCB was designed and built in the Kennewick field office. The virtual timer tag PCB has been installed in all FS1001 juvenile transceivers in the field and in all replacement transceiver stock. The virtual test tag ID number is jumper selectable and is set in the field to match the transceiver ID. The virtual timer tag PCB also has an adjustable potentiometer to set the strength of the virtual tag signal.



*Virtual Test Tag PCB*

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# Kennewick Field Office Cost Saving Efforts through Recycling and Innovation

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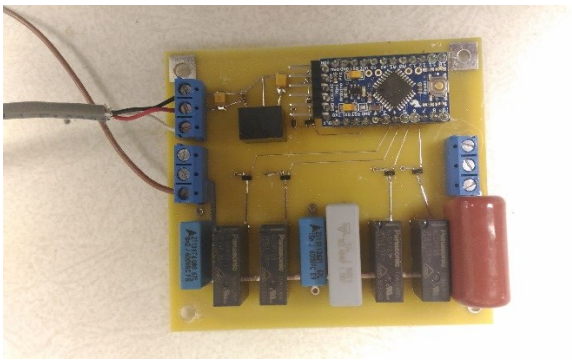
### 2. FS2020 transceiver Full Auto Tune PCB

Due to the limited range of the FS2020 transceiver auto tune, it is often necessary to drive to a site to move a tuning jumper on the transceiver when it goes out of tuning range. This can happen due to water level or temperature changes. A full auto tune add on PCB has been developed and is currently being tested in the Kennewick field office.



*Full Auto Tune PCB*

### 3. FS1001A Auto Tune concept

The same PCB that has been developed for the FS2020 full auto tune could potentially be used as an auto fine tune adjustment on the FS1001A transceiver. This could save travel time to field locations for tuning of transceivers and potentially increase overall detection efficiencies. This project is still in a conceptual development stage. A proof of concept prototype will be built and tested in the near future.

### 4. FS1001A transceiver repurposing

Due to the replacement of many of the FS1001A transceivers with the FS2020 transceivers, we have a surplus of spare FS1001A transceivers. During lab testing of the FS2020 transceivers it was determined that the FS2020 transceiver was not a suitable replacement for the FS1001 juvenile transceiver due to precise SbyC gate timing needed at the juvenile fish facilities. We decided to investigate the possibility of modifying the FS1001A transceiver to perform as a replacement for the FS1001 juvenile transceiver. A few simple modifications were made to the analog board of the FS1001A transceiver and side by side performance comparisons to the FS1001 juvenile transceiver were made in the lab. The testing showed similar performance characteristics. Three modified FS1001A transceivers were modified and are currently being field tested at the Lower Monumental juvenile facility.

## Legacy Transceiver Repairs

The Kennewick field office continues to repair in house all FS1001 and FS1001A transceivers that fail in the field. Simple repairs on the FS2020 transceiver are also done. All transceivers go through a functional burn-in test before being returned to the field. The burn-in tests last for three days and are conducted in an environmental chamber that simulates the temperature ranges in the field.

## UPS repairs

A majority of UPS failures are due to the failure of the battery. We have been replacing these batteries in house and test the UPS before returning to replacement stock. We are also investigating the use of a LiFeP (lithium iron phosphate) replacement battery to give us longer battery life under the high and low temperature conditions in the field.

# Douglas County PUD Wells Dam Bypass Barrier PIT Tag Detection

**KIRSTYN MCKAY** (Biomark)

Douglas County P.U.D. (DCPUD) installed a new juvenile PIT-tag detection system at Wells Dam in March 2016; PTAGIS site ID: WEJ. Wells Dam is a hydrocombine, with the spillbays positioned above the turbine intakes. This configuration has proven effective at passing juvenile fish downstream through spill. The Wells bypass system comprises modifications to 5 of the 11 spillways to enhance bypass efficiency. Hydroacoustic studies demonstrated that more downstream migrants pass through the Spill Bay 2 bypass than through any of the other four bypass bays. Each bypass bay utilizes a baffle structure consisting of 108 approximately 46" x 46" openings arranged in 17 rows of 6 openings. Earlier evaluations identified that attraction/passage of juvenile salmonids was highest when the top and bottom rows and the outside columns of openings were occluded, leaving 64 openings.

DCPUD worked with Biomark to design and install a PIT-tag array in a subset of the bypass baffle openings. The center two openings in the top two rows of openings were equipped with antennas; four antennas total. Biomark used thin-wall shielded antennas to minimize the amount of blockage. Each antenna is connected to an IS1001 reader housed in a submersible enclosure and mounted to the downstream side of the bypass baffle. The IS1001s are connected to an IS1001-Master Controller via a 400-foot CAN Bus cable. Power to the IS1001-MC is provided using an isolation transformer. All diagnostic and tag-detection data is transmitted to a data-collection computer through a fiber optic cable and Biomark's Tag Monitor application is used to collect and subsequently transmit the data to the PTAGIS database.

PIT-tagged juvenile salmonids have been detected at the new array, but no conclusion has been made regarding the efficacy of the new site. If successful, DCPUD may instrument additional bypass baffle openings.

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# Douglas County PUD Wells Dam Bypass Barrier PIT Tag Detection

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