



PIT Tag Information Systems  
Columbia Basin

# Newsletter

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

We welcome input from the PTAGIS community, so email or write us with your story ideas.

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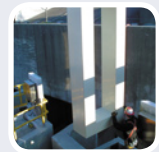
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A Fisheries Data Project of the Pacific States  
Marine Fisheries Commission

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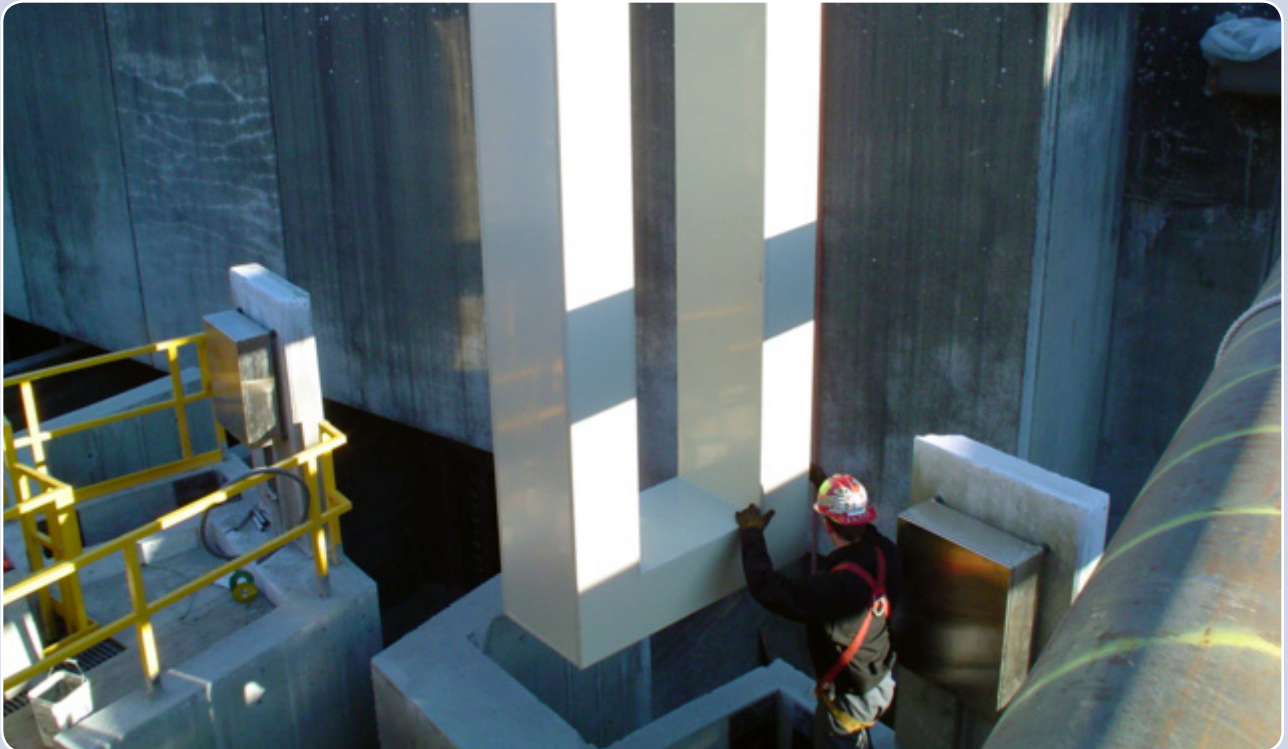
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# NEW VERTICAL SLOT DETECTORS

## at Bonneville Dam



A new pass-through PIT tag antenna is installed in one of the vertical slots at the Bonneville Dam Washington Shore Ladder.

### **Four vertical slot PIT tag detectors have been installed above the counting window in the Washington Shore Fish Ladder at Bonneville Dam.**

As described in the December, 2004 issue of the PTAGIS Newsletter, the four detectors form the new "B04" detection site. The new site is located in the upper section of the Washington Shore Ladder, above the junction with the Upstream Migrant Transport (UMT) Channel that routes fish through the Second Powerhouse from the Cascades Island Ladder.

The B04 (pronounced "Bee Oh Four") detectors are located in the serpentine weir section of the Washington Shore Ladder upstream of the Fish Counting Window. All fish, including those with PIT tags, must pass through each of the four B04 detectors before they exit the ladder to the forebay above the Second Powerhouse. In contrast, the PIT tag detectors in the Cascades

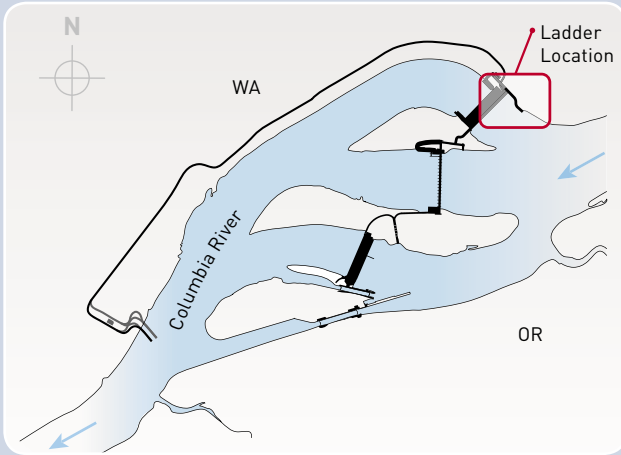
Island (B02) and lower Washington Shore (B03) ladders are installed in pairs of orifices at the base of the ladder weirs. PIT-tagged fish may avoid detection at B02 or B03 by swimming over the tops of the weirs rather than through the orifices. Any PIT-tagged fish that avoid detection at B02 or B03 should be detected when they pass through the vertical slots of B04. The new B04 site will also report detections for any PIT-tagged fish descending this section of the ladder from the forebay.

Following the completion of the construction phase of the B04 site installation, the Washington Shore ladder was watered up on February 28, and the new B04 site began collecting PIT tag detection data on March 2, 2005.

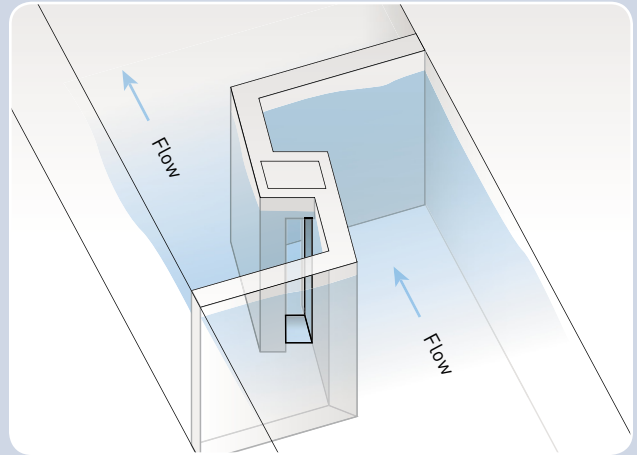
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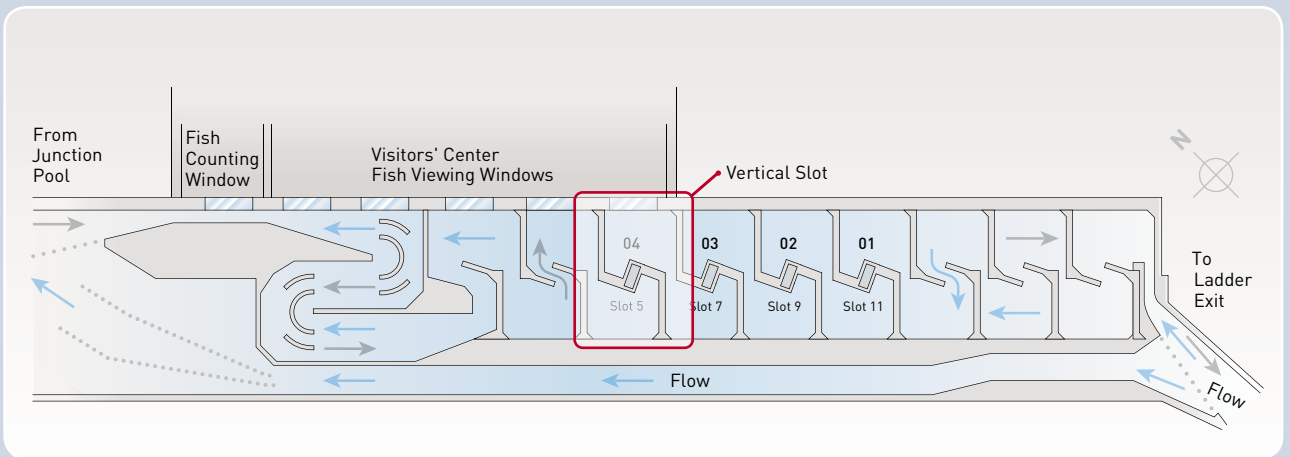
# NEW VERTICAL SLOT DETECTORS → CONTINUED



Site Overview



Vertical Slot Detail



Ladder Detail

# NEW FULL FLOW BYPASS DETECTORS

## at Ice Harbor Dam

**Four PIT tag detectors have been installed in the Full Flow Bypass pipe at Ice Harbor Dam. These detectors will provide data for any PIT-tagged fish observed in the Downstream Migrant Bypass system at Ice Harbor.**

These new detectors at Ice Harbor augment the previous PIT tag detection capabilities provided by the detectors located in the facility's two fish ladders. The previous ladder installation was identified as "Ice Harbor Adult" (IHA). The new "Ice Harbor

Dam" (ICH) installation combines the existing adult ladder detectors with the new Full Flow Bypass detectors.

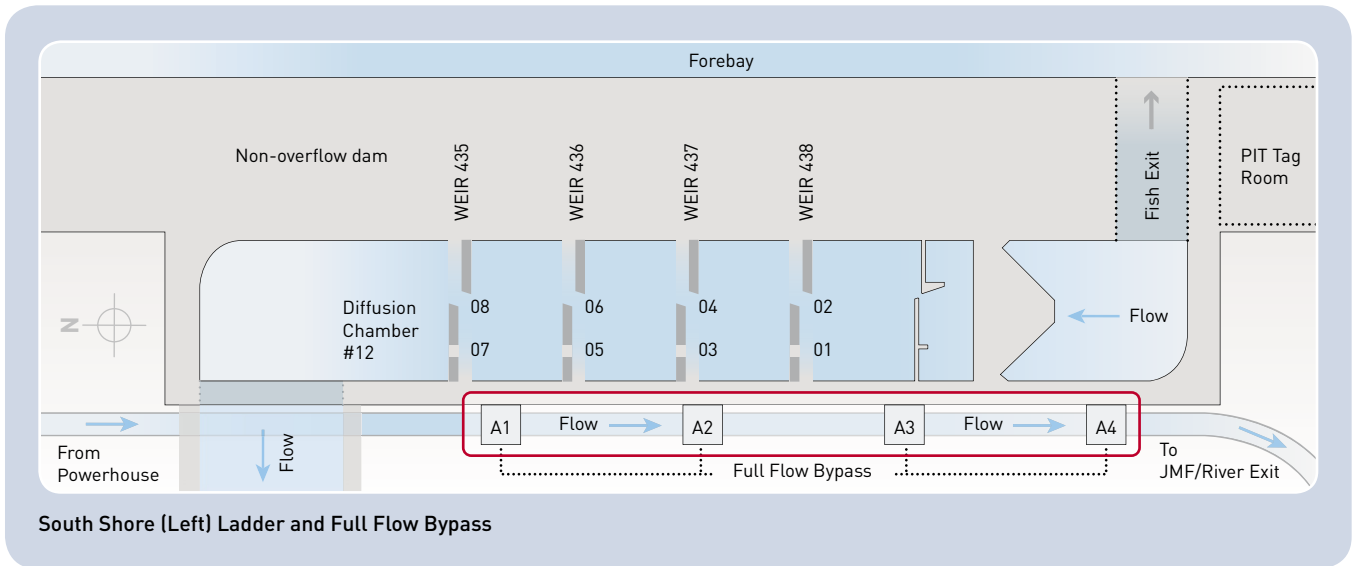
The four detectors are located on the 36" diameter Full Flow Bypass pipe. The pipe conveys juvenile and adult migrants and fallbacks between the collection channel's primary dewatering screen and the switch gate and flume above the Juvenile Monitoring Facility (JMF). The bypass system routes fish away from the powerhouse turbine intakes and delivers them to the facility tailrace.



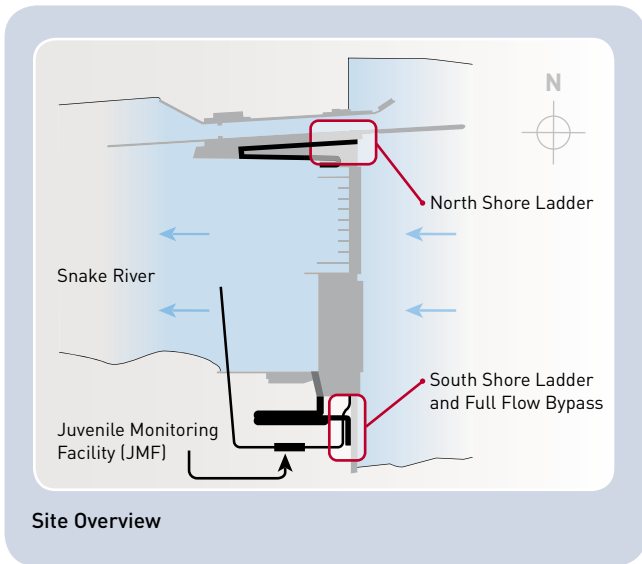
The new PIT tag detectors located on the Full Flow Bypass pipe at Ice Harbor Dam.



# NEW FULL FLOW BYPASS DETECTORS → CONTINUED



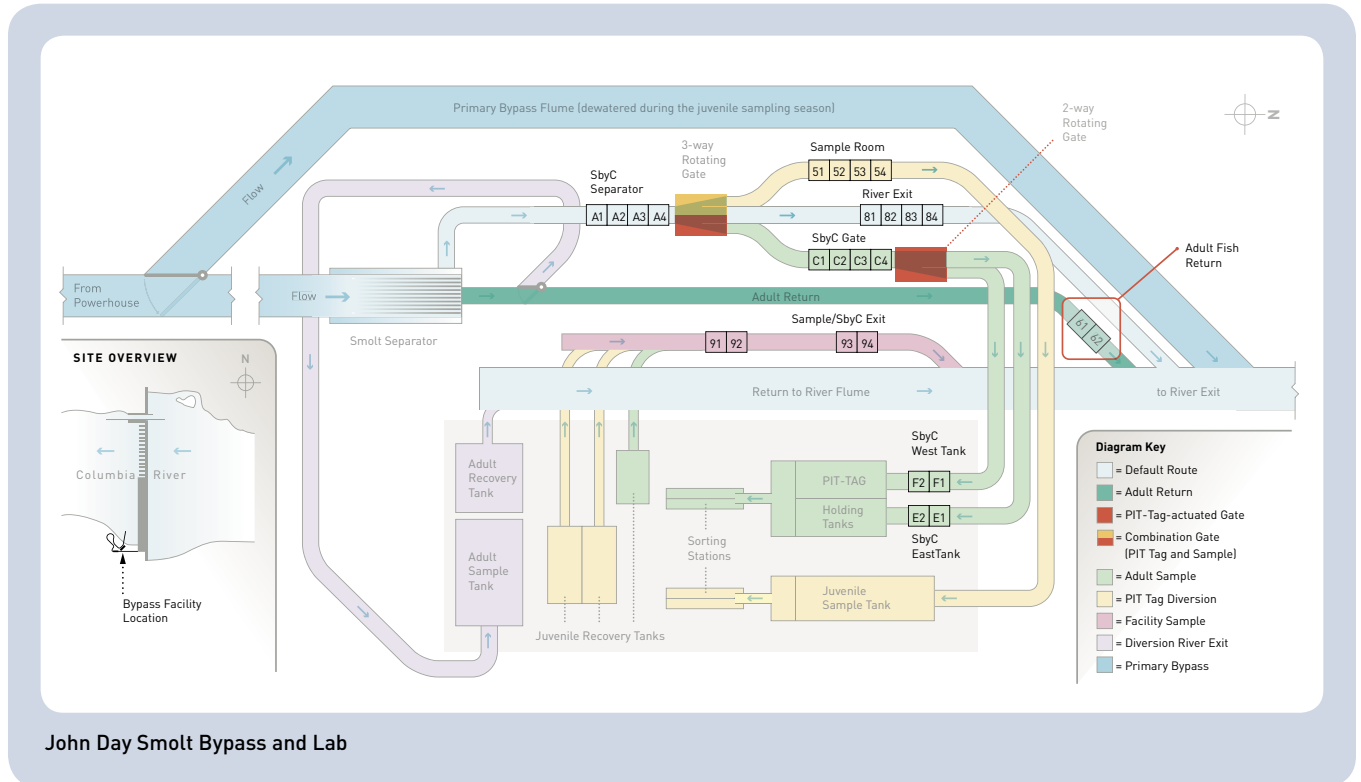
South Shore (Left) Ladder and Full Flow Bypass



Site Overview

# ADULT FISH RETURN DETECTOR

## added at John Day Dam



**During March, 2005, a two-antenna PIT tag monitor was installed in the Adult Fish Return flume of the John Day Dam Fish Monitoring Facility. Previously, no PIT tag detection was available in this flume, which routes large fish from the facility's adult and debris separator back to the river. The first PIT-tagged fish was detected in this flume on April 1, 2005, the day the facility watered-up.**

While juvenile salmon and steelhead are segregated from larger (typically adult) fish at the separator, the Adult Fish Return flume provides a direct route back to the John Day tailrace for those large fish that pass over the bars of the separator. Typically, these fish are steelhead kelts returning to the ocean, or other adult salmon and steelhead migrating upriver that have ascended the fish ladders and then "fall back" through the facility's Juvenile Bypass System.

The Adult Fish Return PIT tag monitor was installed to detect any PIT-tagged fish routed back to the John Day tailrace. This includes any juvenile salmon or steelhead that might incidentally pass over the separator and be routed through the Adult Fish Return flume back to the river.

The PIT Tag Steering Committee recommended this installation of the new PIT tag monitor on the Adult Fish Return flume. This is the second such monitor to be installed in the adult fish exit route downstream of a separator; the first was at the McNary Dam Juvenile Fish Facility in June, 2003. Similar PIT tag monitors are planned for the adult fish exit routes at other juvenile fish facilities in the Snake River. ☺

# Development of a **PIT TAG DETECTION SYSTEM** for the Corner Collector at Bonneville Dam — April 2005 update

BY SANDRA L. DOWNING ( NOAA-Fisheries )

**As reported in earlier PTAGIS newsletters, BPA, the Corps, Digital Angel Corporation (DA), NMFS, and PSMFC are working on developing a PIT tag system for the corner collector at Bonneville Dam.**

The project is currently on schedule for having the system installed in time for the 2006 smolt migration. For this corner collector PIT tag system to be successful, DA has had to develop a new transceiver, new tag, and now a new antenna system.

The group is moving forward on a slot antenna design. This design will make this installation similar to the PIT tag systems installed into the fish ladders, where BPA will be responsible for providing the antennas and the Corps will be responsible for designing how to modify the location for installing the provided antennas. The Corps will be designing the concrete flume structure that will hold the slot antenna.



DA Test Frame

Through a contract with BPA, DA will be designing the slot antenna, which consists of three separate coils that form a single antenna for detecting tagged fish transiting the exit flume of the corner collector.

**In the March newsletter, we outlined what the immediate goals were for the project. These were to determine the following:**

- ① The maximum antenna height (the antenna width will be around 17') which will still enable tags to be detected within the entire antenna (this needs to be reinvestigated because of advancements in the transceiver).
- ② The specifics on material for fabricating the housing for the antenna.
- ③ The specific slot size necessary to accommodate the three antenna coils.
- ④ The design of a slot insert that will allow the flume to operate in 2006 even if a PIT tag antenna is not available.
- ⑤ The specifics on the best nonferrous concrete formulation.
- ⑥ The specifics for how to wind the coils (e.g., what will be the design for the stand-offs to maintain the air gap around the coil wires).

Although not all of these goals have been reached at this time, progress is being made. DA has evaluated different types of wire to determine the best type for this application. They settled on a custom 1100-strand wire. They also constructed a full-size adjustable frame to enable them to test different antenna heights. Preliminary tests established that they could intermittently read optimally (0°) oriented PIT tags in the center of a 16' by 18' antenna. However, since we do not know what fish behavior will be within the flume, it is impossible to predict how well tagged fish would be detected; nevertheless, this is encouraging. Tests are currently being conducted at the full-scale testing facility located in St. Paul, Minnesota to determine the maximum antenna height, optimal antenna width, and coil suspension.

DA has also met with several engineering firms to discuss antenna housing designs and materials. They have decided to use an ultrahigh molecular weight (UHMW) polyethylene material for the antenna housing.



## PIT TAG DETECTION SYSTEM → CONTINUED

This is the same material that the Corps used for the two-mile-long pipe that transports fish from the Second Powerhouse at Bonneville Dam down to the juvenile fish facility. DA and its engineers are aware that in their housing design, they will need to take into account the thermal and compression characteristics of this material. They have also settled on using fiberglass for the skid plate that will protect the antenna housing from trees transiting the flume. In addition, they have finalized the determination that the three coils will be enclosed in a single housing.

DA plans to fabricate a full-scale housing this summer. In the fall, DA will test the full-scale housing in the existing test pit at Bonneville Dam once the Corps removes the old antenna and seals the sheet piles so that the antenna can be evaluated under wet conditions.

Based on discussions held by the group regarding how the roof over the slot antenna should be designed, requirements for accessing the antenna housing, where the PIT tag equipment should be located, and what the shield dimensions need to be, the Corps has finished its 60% Plans and Specifications for the corner-collector PIT tag system since the last newsletter update. A meeting is set for mid April where DA will provide



Coils Test Site

information to the Corps that will allow them to work on the 90% Plans and Specifications. These are scheduled to be completed by the beginning of June and the 100% Plans and Specifications should be completed by the beginning of July.

**The Corps has also formulated a construction schedule. Here is a timetable (as of 4/14/2005) for some of the major tasks:**

- ① The construction contract will begin on October 1st.
- ② The existing test pit will be renovated for testing the new slot antenna in October.
- ③ For the pit, the Corps will be supplying power attached to the same power source as will be used for the final corner-collector installation.
- ④ The new slot antenna will be tested in the test pit from mid November to the end of January.
- ⑤ The Corps contractor will perform the excavation and demolition necessary to prepare the flume section from mid October to mid November.
- ⑥ The Corps contractor will construct the concrete housing that will hold the slot antenna from mid November to mid February.
- ⑦ The antenna will be moved from the test pit to the flume and installed during February.
- ⑧ Using the same power source that supplied the test pit, the antenna will be tested under dry flume conditions during the first half of March.
- ⑨ The corner collector will be operated for the Spring Creek fish release in mid to late March (this will permit some evaluation under operating conditions).
- ⑩ Until mid April, more testing can be conducted under dry flume conditions.
- ⑪ The corner collector will start its normal operating schedule in mid April.
- ⑫ The power system, computer building, and HVAC system will be finalized by the end of April.
- ⑬ Fish tests to evaluate the performance of the corner-collector PIT tag system will be conducted throughout 2006.

Depending on system performance (i.e., will the corner-collector interrogation system achieve the overall detection rate of 60% needed to provide adequate PIT tag detection coverage at Bonneville Dam), a decision will be made on whether to move forward with a second antenna site. ©



# TRANSCEIVER FIRMWARE

## upgrade now available from PTAGIS

**It's very important that everyone using the FS2001 transceivers upgrade to the Version 5.0 firmware as soon as possible, even if they are not using currently using the SGL tags, to ensure that any fish marked with an SGL tag and subsequently recaptured is properly identified as a PIT-tagged fish.**

The new SGL tags were described in the November, 2004, issue of the PTAGIS Newsletter. An article in the December, 2004, Newsletter noted that the firmware on the older versions of the FS2001 portable transceivers (commonly known as the "yellow cheese blocks") must be updated from Version 2.x to Version 5.0 in order to decode the SGL tags.

Digital Angel has provided the firmware upgrade packages to PTAGIS. These packages, and the instructions to perform the upgrade, are available from the PTAGIS Web and FTP sites.

Older models of the FS2001 PIT tag transceiver require a firmware upgrade in order to detect and decode the new SGL PIT tags now being distributed and used in the Columbia Basin.

If you have an older FS2001 portable transceiver with the Version 2.x firmware, or are unsure what firmware revision your transceiver has, please download and read the firmware upgrade instructions.

You must read these instructions first, as they describe how to determine which firmware package is required for each transceiver model. The instructions also describe how to download the firmware packages and extract the encrypted files to your local computer.

Please update your firmware as soon as possible. In the near future, the new SGL tags are expected to be prevalent, if not the dominate PIT tag model, in the Columbia Basin. It is critical that all transceivers be able to detect and decode these tags. ©

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P3 | MiniMon | MobileMonitor | **Firmware**

### Firmware

#### DIGITAL ANGEL TRANSCEIVER FIRMWARE UPDATE

Digital Angel Corp. (formerly Destron-Fearing Corp.) recently released a new model of 12mm PIT Tag, commonly known as the "SGL" tag. The firmware used in PIT Tag transceivers manufactured by Digital Angel prior to 2005 can not decode these tags.

DOWNLOADS

INSTRUCTIONS

SUPPORT

USER MANUALS

### OBTAINING AND UPGRADING THE TRANSCEIVER FIRMWARE

#### WEB

<http://test.ptagis.org/ptagis>  
(soon to be <http://www.ptagis.org/ptagis>)

Click →

#### FTP

[ftp://ftp.ptagis.org/FS2001\\_firmware/FS2001\\_Upgrade\\_Instructions.pdf](ftp://ftp.ptagis.org/FS2001_firmware/FS2001_Upgrade_Instructions.pdf)

Click →

## PTAGIS client SOFTWARE MAINTENANCE

**The support and maintenance of all client applications developed by PTAGIS is one of our highest priorities. Feature requests and issues regarding these applications are collected from the community and tracked within a database.**

SUPPORT
P3

[FAQ](#)    [CONTACT INFO](#)

**Report a Bug**

Please use this form to report a bug or request a new feature in our products. Be sure to complete each field. We may not be able to respond directly to each request due to time constraints, but we encourage you to submit reports nonetheless.

**Contact Information**

First Name

Last Name

Company

Email Address

Phone Number

**Product Information**

Product

Component

Version

**Computer Information**

Computer Model

Operating System

**Problem Description**

Type of Problem

Severity

Description:

How to Reproduce:

File Attachment:  no file selected

Please use the Online Support tool for submitting enhancement requests for PTAGIS client tools. To do this, go to the P3 page and click the Support link. Click to go to [ptagis.org](http://ptagis.org) →

Upgrades for the PTAGIS applications are released on a biannual schedule in early spring and, if necessary, again in the fall to facilitate the startup of the majority of marking and monitoring projects. A few exceptions to this release schedule may occur for critical issues or requests, such as compatibility issues with recent transceiver firmware modifications. We try to minimize the number of software releases as much as possible to maintain the highest fidelity of application functionality. Each application has an accompanying "readme.txt" file that documents the details of each release. We strongly recommend reading this file before upgrading any application.

A typical software release process entails a review and prioritization of all the latest requests and issues that have been collected from the community. We try to scope our applications for the broadest use within the community; however, history has shown again and again that an application that tries to do everything for everyone will become obsolete very quickly due to its own complexity. Any request that is deemed out of scope for the community or that could possibly destabilize the code base will not make it into a software release. These types of requests are not thrown away because they are helpful for painting the "big design picture" when the application is redeveloped from the ground-up.

### The current status of the PTAGIS client software releases are:

SOFTWARE	VERSION	UPDATE	DESCRIPTION
<b>P3</b>	1.4.1	3/28/04	Includes a high-priority request for a new type of reader after 1.4.0 was released a month earlier.
<b>MiniMon</b>	1.4.5	10/14/04	Compatibility upgrade for FS1001M firmware modification.

A new release of MiniMon 1.4.6 and the first production release of MobileMonitor are pending modifications by the manufacturer to the FS1001M firmware. ©