

Replacing a Legacy LIMS at the Pacific Environmental Science Centre



The Pacific Environmental Science Centre (PESC) had been using a LIMS developed in the 1970s, DEC-PDP 11/94 mainframe, but, with multi-functionality required, covering 105 applications, and with 12 functional areas of the laboratory and around 500,000 tests conducted per year, the system was becoming increasingly more difficult and time-consuming to maintain. During a STARLIMS User Group conference, Richard Strub, Head of Scientific Support at PESC, described the process of migrating to STARLIMS.

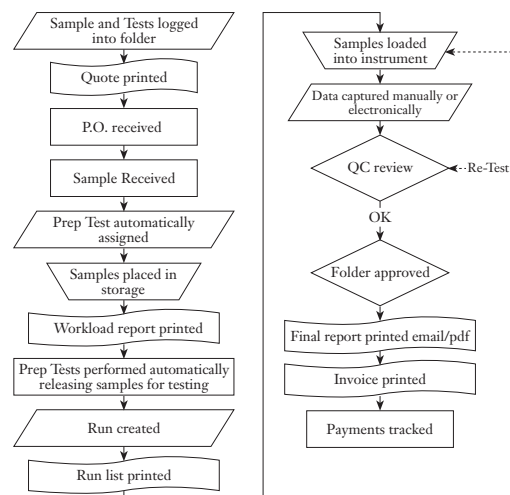
The PESC is Environment Canada's premier science centre in Western Canada and provides the core laboratory and field operations required for the Department's regional programs. Types of media the PESC deal with range from fresh and marine waters, sewage and industrial effluents, soils and sediments, to biological tissue – plant and animal, petroleum products, rainwater and air filters. Analyses conducted by the centre cover, legal, emergency response, water reservoir contamination, fish kills, compliance monitoring, methods development projects, federal and provincial agencies, and analyses for academic institutions. The PESC combines chemistry, toxicology, microbiology, sample management/contract management, data management, enforcement and emergencies, and field programs.

Major Hurdles

The main obstacles to be overcome with a new LIMS included the migration of 25 years of database programming within a short time frame, the completion of a QC/QA module, and training users to use the new system.

A number of functional areas needed to be incorporated into the LIMS system, covering data collection, worklist scheduling, system management, resource accounting, resource monitoring, sub-contracting, sample management, quality control, exception reporting, approval and interpretation, client billing and result reporting.

Workflow of Samples



This is a general workflow of samples processed by the lab.

“Migrating 25 years of database programming within 117 days”



Implementation Plan

The plan involved selecting a system, installing, getting familiar with the system, and configuring it to PESC requirements, and finally, implementation and support. The process began in December 1998 with a GAP analysis. In June 1999, the contract was awarded to STARLIMS / Sierra consultants. By January 1, 2000 the LIMS system was operational. The procedure was completed in just 117 days.

The STARLIMS implementation brought together a diverse team: PESC staff, STARLIMS, Sierra Consultants and Lockspur Systems.

Phases 1 & 2

Data was received from external sources and merged with the in-house data. The new system provides more elegant and flexible client reporting. The next stage included moving the billing system to the new LIMS system. The batch level QC management and sample level QC capabilities were added. Seventeen instruments required instrument interfacing for data collection and log-in sample management.

Phase 3 – Quality Control

The new system became fully operational, moving into the 4th generation of LIMS, “an intuitive/intelligent system”. PESC’s requirements as a regulatory lab, made stringent quality control paramount. A hurdle STARLIMS had to deal with was the ability to modulate the old PC run, level-type control modules such as, reference materials, replicates, spikes, equipment blanks and method blanks. At the sample level, QC is required for applications such as Nutrients, Cyanide, Nitrogen, Phosphorous, Metals (Total, Dissolved, Extractable), General (anion/cation, Residues, COD/BOD, pH), and Organics (O&G, TIC/TOC, CPs).

Evaluation

The migration from the old LIMS system to the new STARLIMS system was successful. All QA/QC data modules have been incorporated within the LIMS. Clients are receiving newly generated Crystal Reports on chemical analysis, which are sent electronically. Electronic reporting reduces paper, postage, turn-around time and archived report filing.

The query capabilities have been enhanced compared to the mainframe system. Crystal Reports provide assistance to all analysts, the QA officer, and the management team. Since the new system was implemented, the database has never been corrupted.

Conclusion

The users of STARLIMS have found it to be a flexible, upgradeable, user friendly and robust system. All applications are delivered from the old mainframe system providing PESC with a quality-accredited system

STARLIMS Corporation delivers cost effective, easy-to-use collaborative Laboratory Information Management Systems (LIMS) to organizations in the public health, pharmaceutical, petrochemical, forensics, food & beverage, environmental and chemical industries. Full featured and highly flexible our multilingual LIMS solution provides complete traceability leading to regulatory compliance, without compromising process versatility.

A 15 year track record has earned us recognition for "future proofing" our customers' investments and serving as a platform for new implementations and straightforward conversions of legacy systems.

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