Retrieving Data from the SCT Database

A Java Graphical User Interface

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ATLAS SCT Week 30th Sep 2002

- Why use a Java Standalone application?
- Current features/capabilities of the java GUI
- Developing your own application

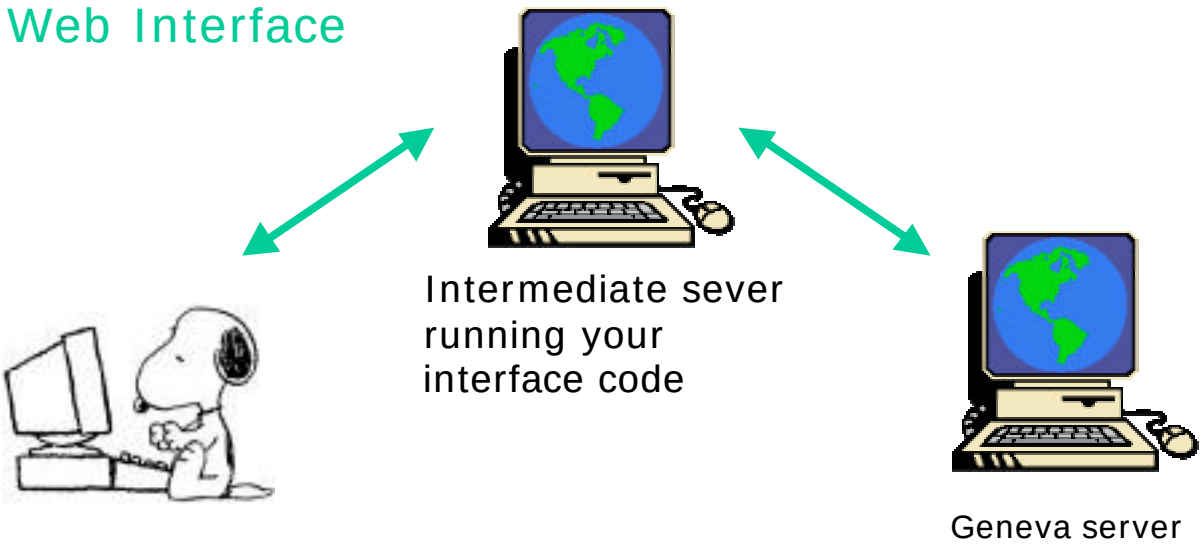
This talk is available as a PDF file from www.hep.phy.cam.ac.uk/silicon (menu item Talks/Presentations)

Interacting with the SCT Database

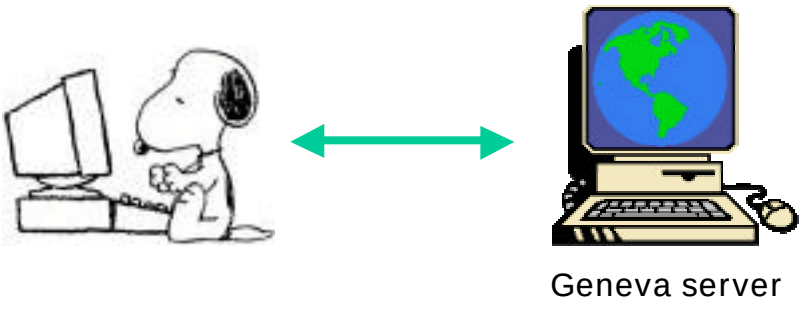
Web Interface or Standalone Application?

A web interface (eg CGI script) will not be an efficient use of the network, unless it runs directly on the Geneva web server. Also note applets are ruled out due to fundamental security restrictions.

Web Interface



Standalone Application



Why choose a Java Standalone Application?

• The users of your database interface will want to use it on a variety of platforms (windows, Linux, Mac..)

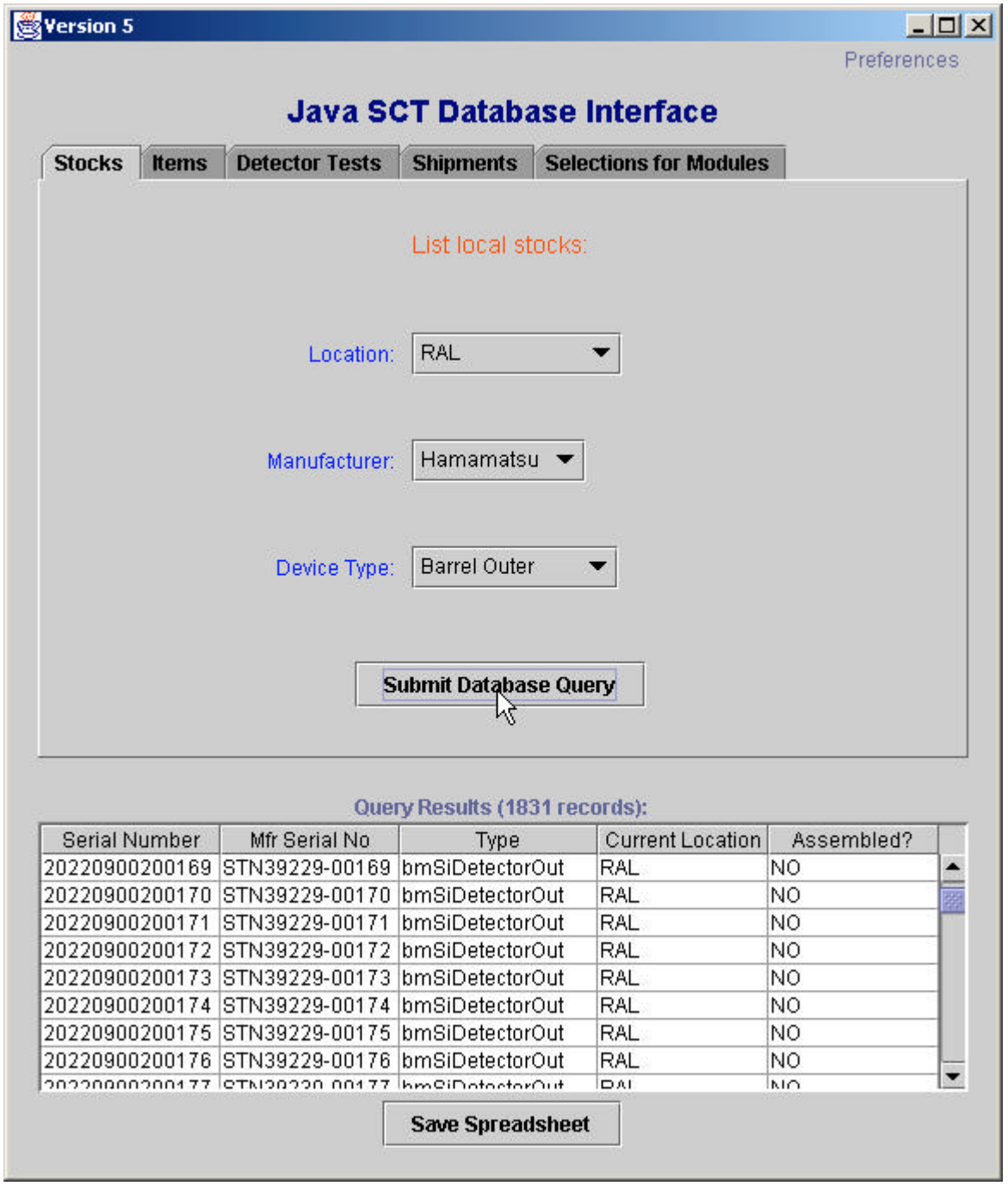
• Java is superb for networking applications, but an applet is not suitable (need access to local file system, and an applet will only work if on the Geneva server)

• Java is relatively easy to learn, with excellent tutorials on the java language and jdbc classes at Sun's website www.javasoft.com

• Writing a java application is easy:
  - download and install the latest JDK from www.javasoft.com
  - write your code using your favorite text editor ('notepad' will suffice)
  - Compile and Run it!

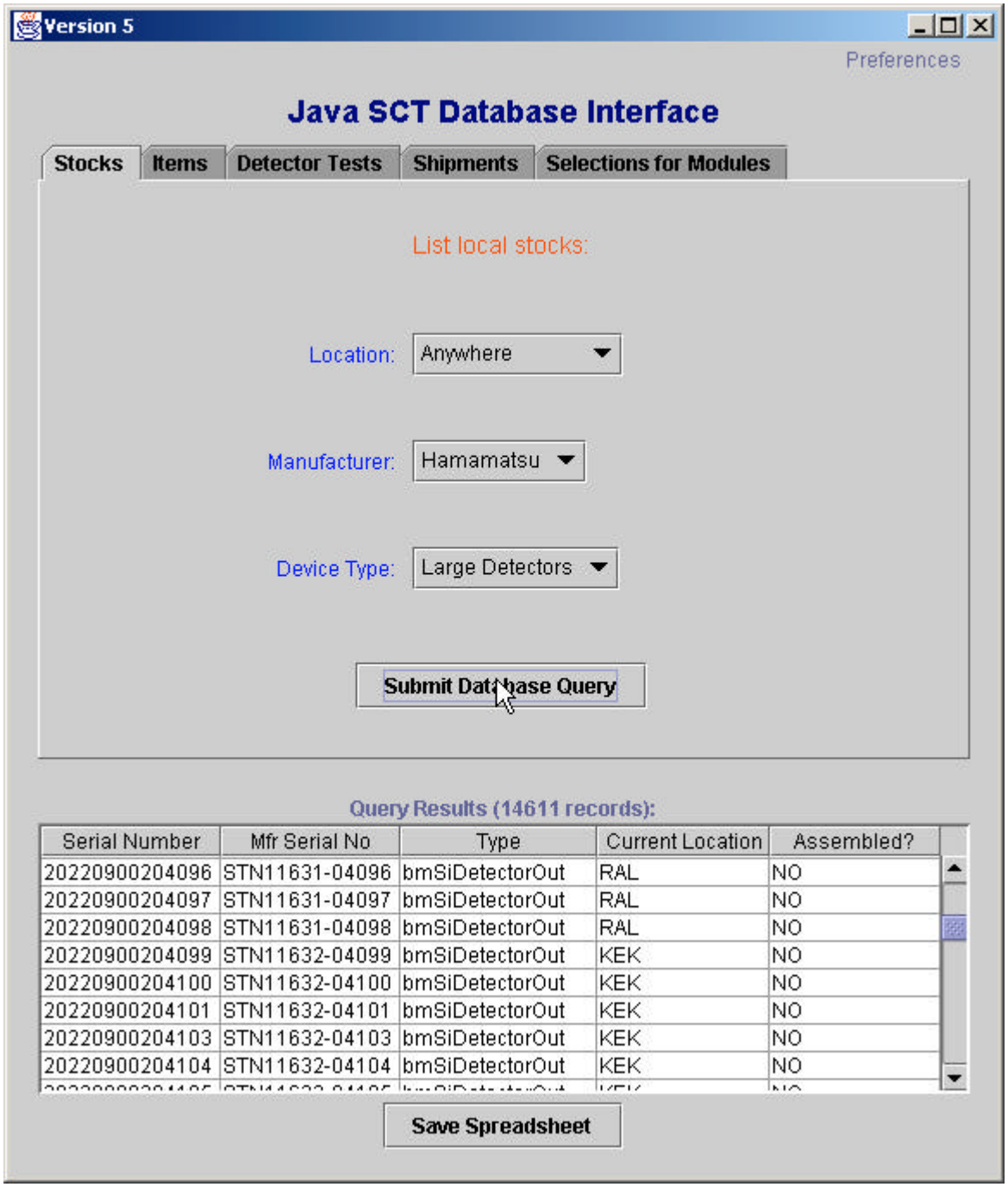
Example of A Simple Query

request a listing of all barrel detectors at RAL:

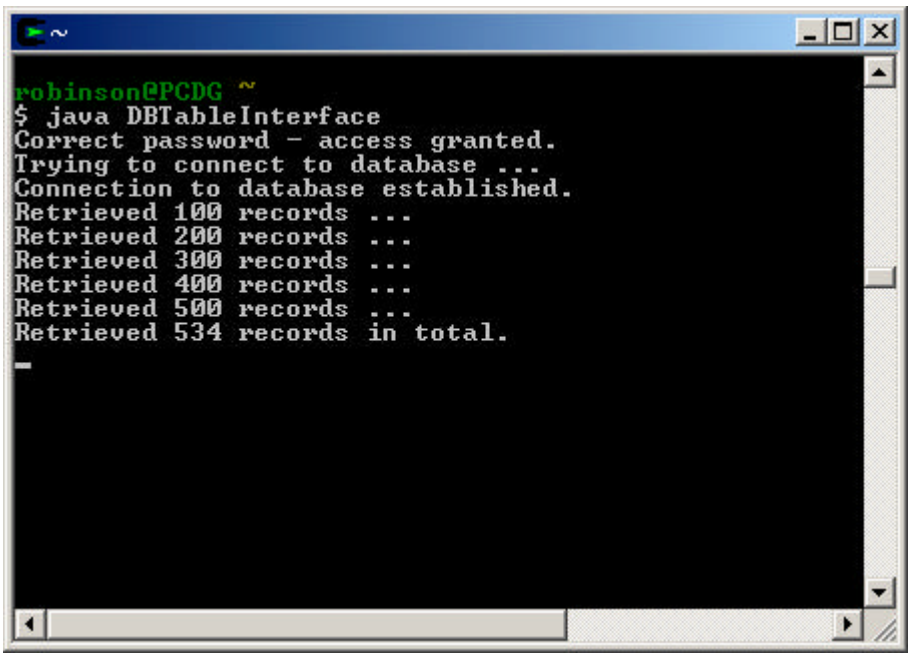


A more general ‘Stocks’ query:

List all detectors supplied to the SCT by Hamamatsu



During data retrieval the status of the SQL query can be viewed in the DOS window (or console if not running Windows):



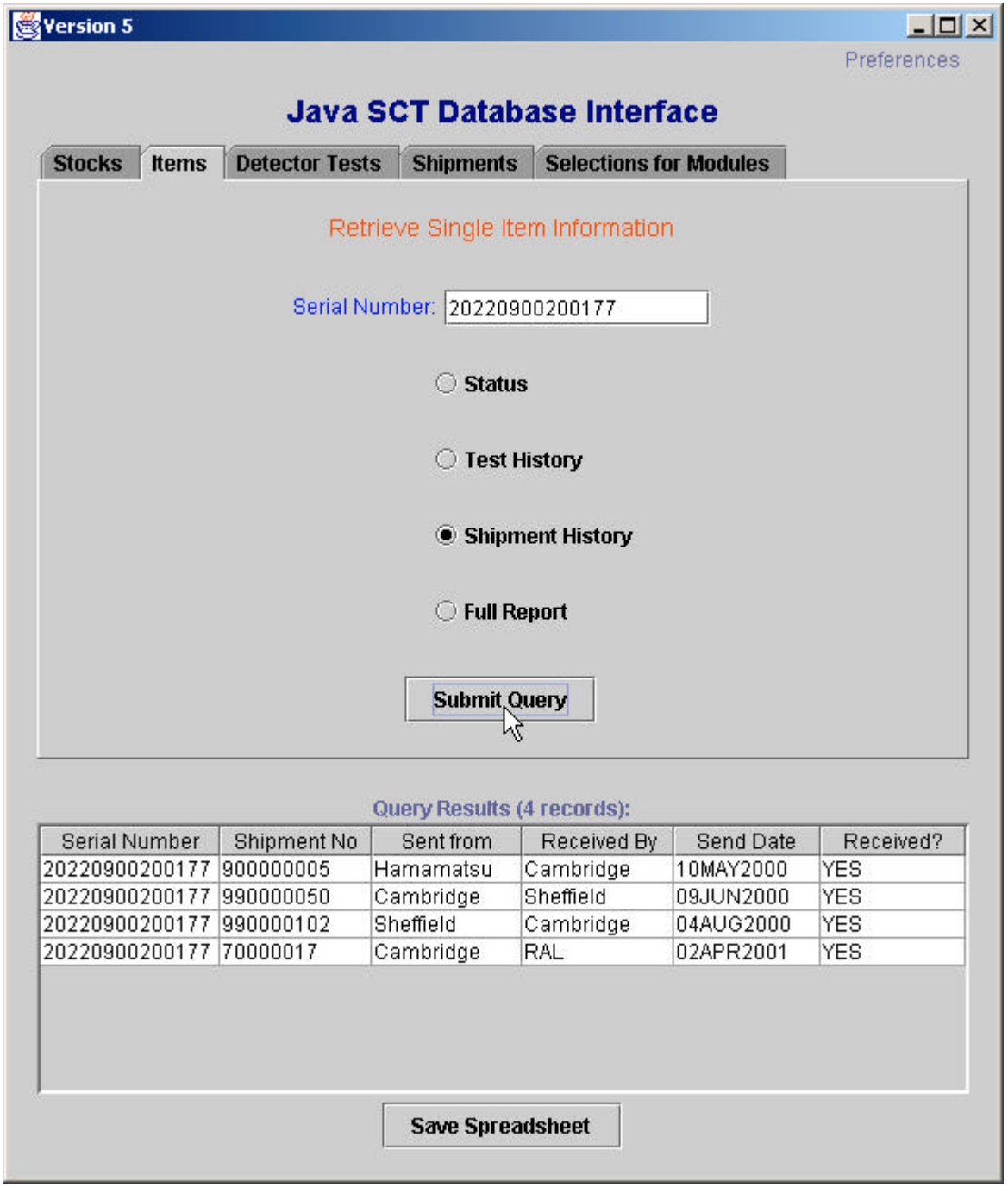
Data retrieval is fast - typically a few seconds to generate a simple spreadsheet (like this one) of several hundred records.

In its present form the GUI provides five general categories of query:

- **Stocks**
  Simple list of items at a given institute
- **Items**
  Reports on a single device,
  eg status and location, shipment history, test history, full test report
- **Detector Tests**
  Retrieves any test data from manufacturer and ATLAS institute *Eg: test results, comparisons with manufacturer data, testing status, raw data listings, test images*
- **Shipments**
  Reports of shipments between any manufacturer or institute to another manufacturer/institute, for any type of component, *and for each shipment: lists of items, test status of items, test results, raw data, test images etc*
- **Selections for Modules**
  Lists of devices available for assembly at a given institute, filtered according to requested level of detector quality. Assignments of detectors to modules, generation of assignment reports and database files

Example of Items Query:

Shipment history of a detector



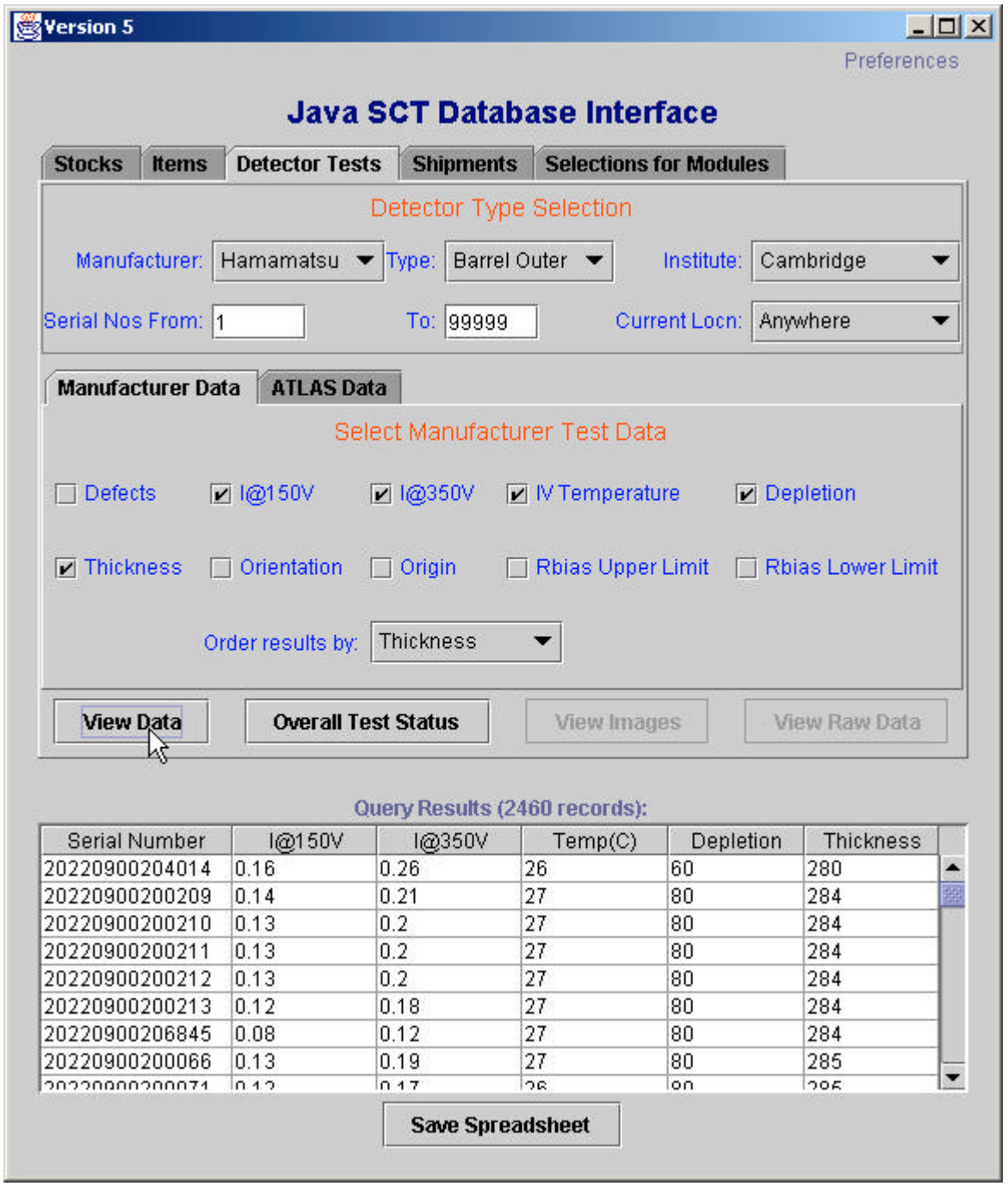
Serial Number	Shipment No	Sent from	Received By	Send Date	Received?
20220900200177	900000005	Hamamatsu	Cambridge	10MAY2000	YES
20220900200177	990000050	Cambridge	Sheffield	09JUN2000	YES
20220900200177	990000102	Sheffield	Cambridge	04AUG2000	YES
20220900200177	70000017	Cambridge	RAL	02APR2001	YES

This detector has been shipped 4 times

Hamamatsu-Cambridge-Sheffield-Cambridge-RAL

Example of Detector Tests Query:

List manufacturer data for all barrel detectors supplied by Hamamatsu to Cambridge, listed in order of wafer thickness (thinnest first):

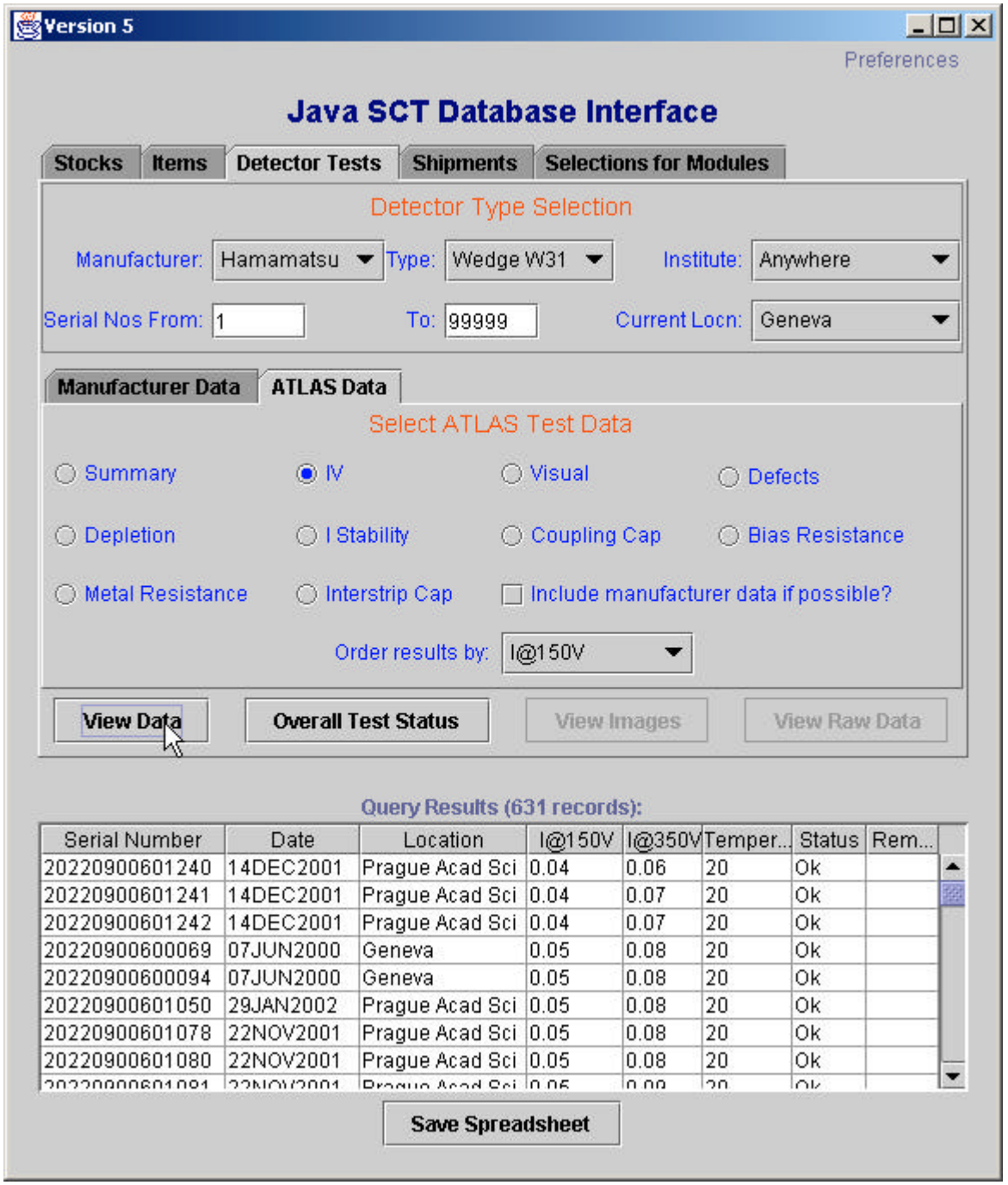


Serial Number	I@150V	I@350V	Temp(C)	Depletion	Thickness
20220900204014	0.16	0.26	26	60	280
20220900200209	0.14	0.21	27	80	284
20220900200210	0.13	0.2	27	80	284
20220900200211	0.13	0.2	27	80	284
20220900200212	0.13	0.2	27	80	284
20220900200213	0.12	0.18	27	80	284
20220900206845	0.08	0.12	27	80	284
20220900200066	0.13	0.19	27	80	285

2460 barrels have been delivered to Cambridge by Hamamatsu, the thinnest is 280 microns.

Example of ATLAS Tests Query

Eg List IV data of all W31 Hamamatsu devices currently at Geneva, regardless of where the IV test was performed (ordered by current at 150V):

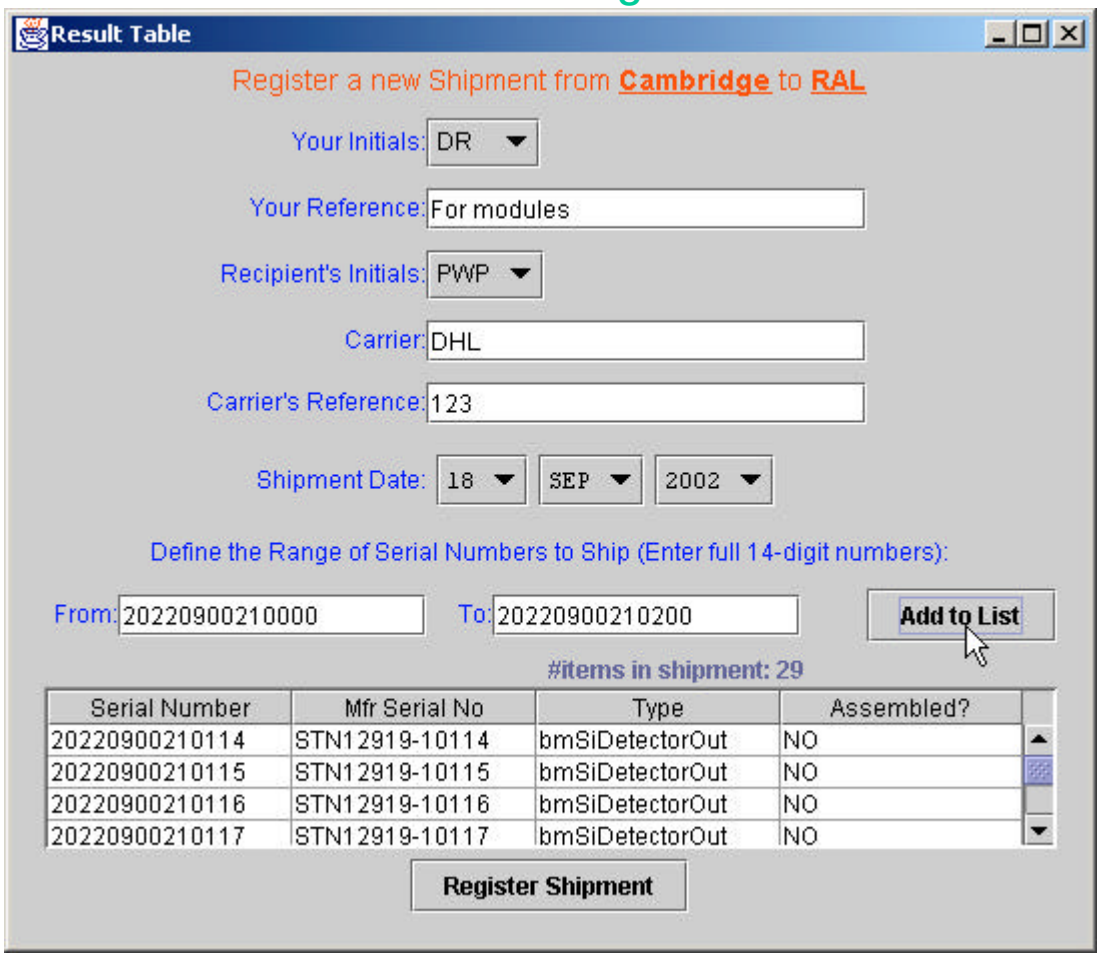


Serial Number	Date	Location	I@150V	I@350V	Temper...	Status	Rem...
20220900601240	14DEC2001	Prague Acad Sci	0.04	0.06	20	Ok	
20220900601241	14DEC2001	Prague Acad Sci	0.04	0.07	20	Ok	
20220900601242	14DEC2001	Prague Acad Sci	0.04	0.07	20	Ok	
20220900600069	07JUN2000	Geneva	0.05	0.08	20	Ok	
20220900600094	07JUN2000	Geneva	0.05	0.08	20	Ok	
20220900601050	29JAN2002	Prague Acad Sci	0.05	0.08	20	Ok	
20220900601078	22NOV2001	Prague Acad Sci	0.05	0.08	20	Ok	
20220900601080	22NOV2001	Prague Acad Sci	0.05	0.08	20	Ok	

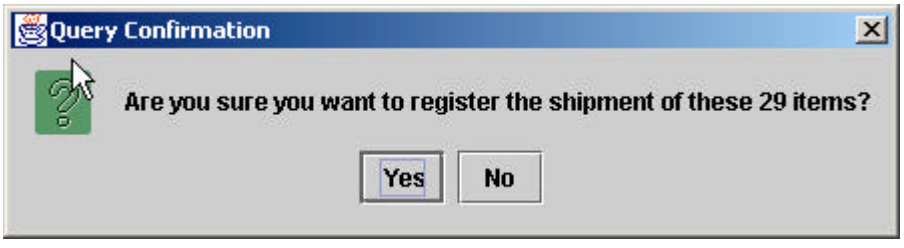
There are 631 records of IV measurements for Geneva's W31 detectors

Creating a New Shipment

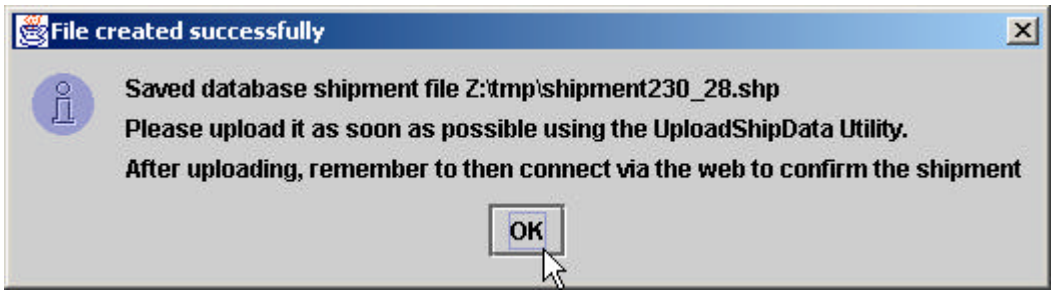
Eg, I want to ship all barrels from #10000 to #10200 from Cambridge to RAL



Click on ‘Register Shipment’ after all the devices that you want to ship are listed, and confirm your request:



Creation of Database Shipment file



EditPad Lite

File Edit Block Convert Options View Help

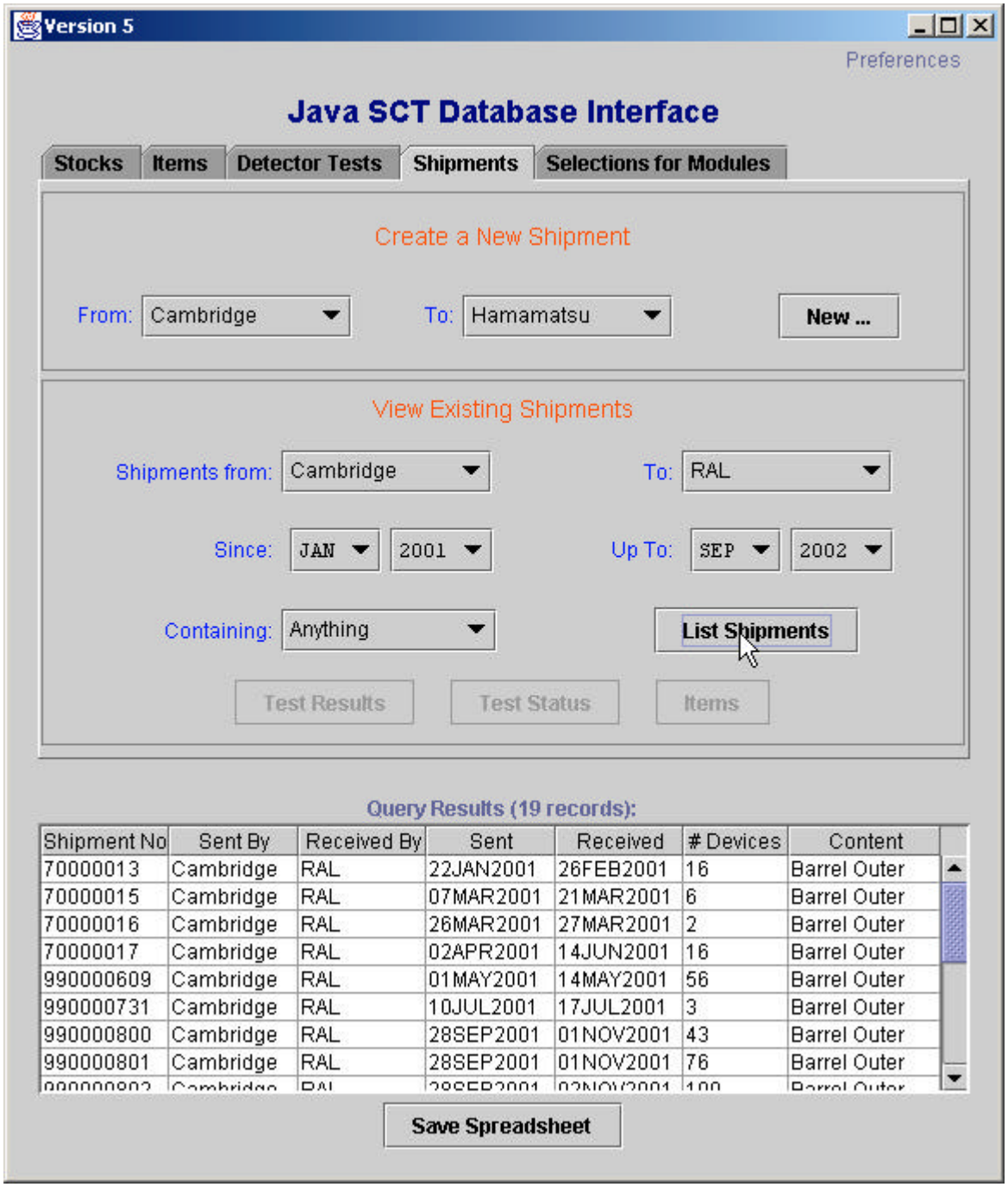
shipment230_28.shp

```
%Shipment
SHIP DATE : 18/SEP/2002
SENDER PERSON : DR
SENDER LOCATION : Cambridge
DEST PERSON : PWP
DEST LOCATION : RAL
CARRIER NAME : DHL
CARRIER Ref : 123
References : For modules
NO Packs : 29
Weight : 1
%ShipItem
20220900210114
20220900210115
20220900210116
20220900210117
20220900210118
20220900210120
20220900210121
20220900210124
20220900210125
20220900210126
20220900210127
20220900210128
20220900210129
20220900210131
20220900210132
20220900210133
20220900210134
20220900210135
20220900210136
20220900210137
```

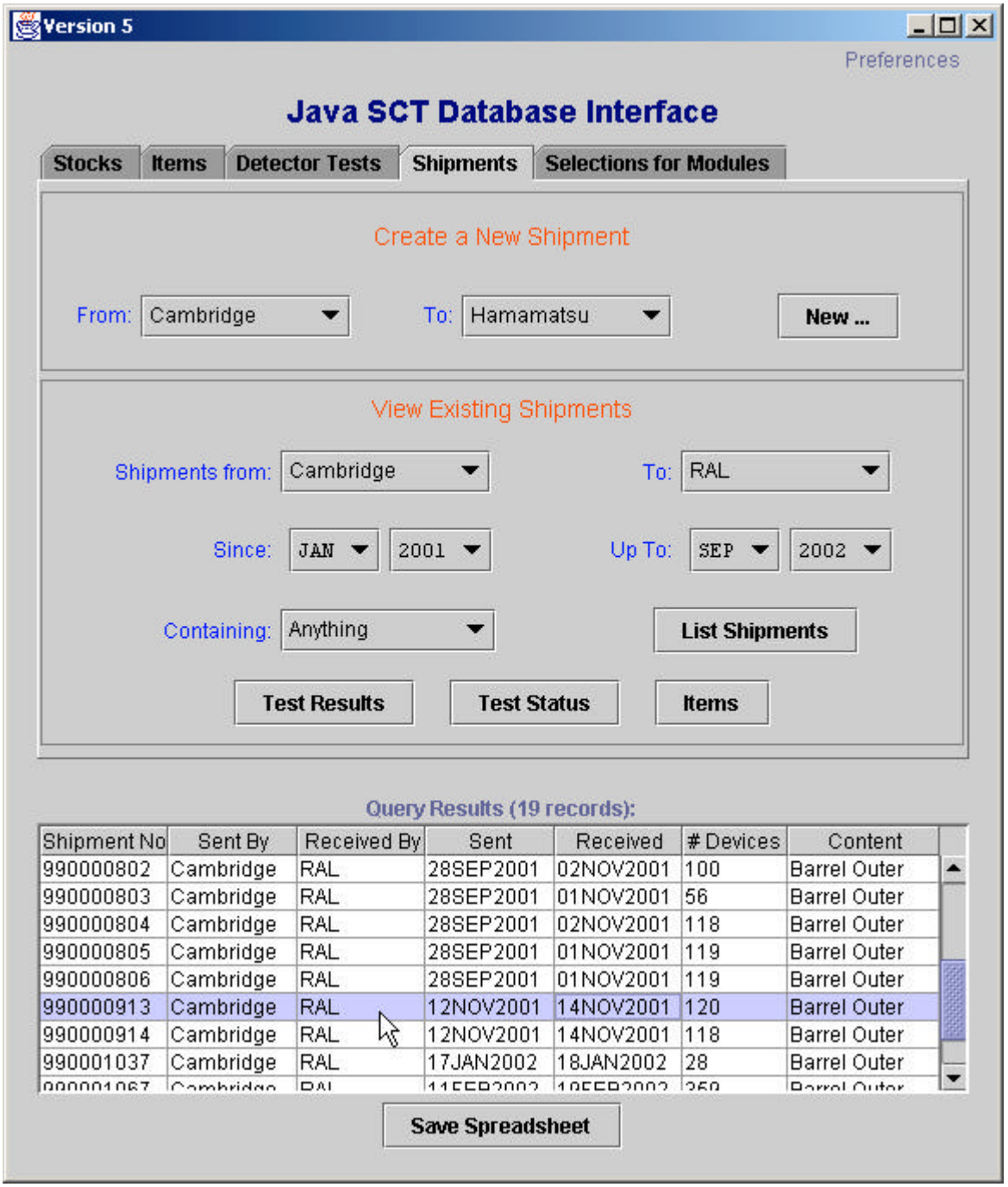
1: 1 Insert Z:\tmp\shipment230_28.shp

Example of Shipments Query

List of shipments from Cambridge to RAL, between January 2001 to the present day:

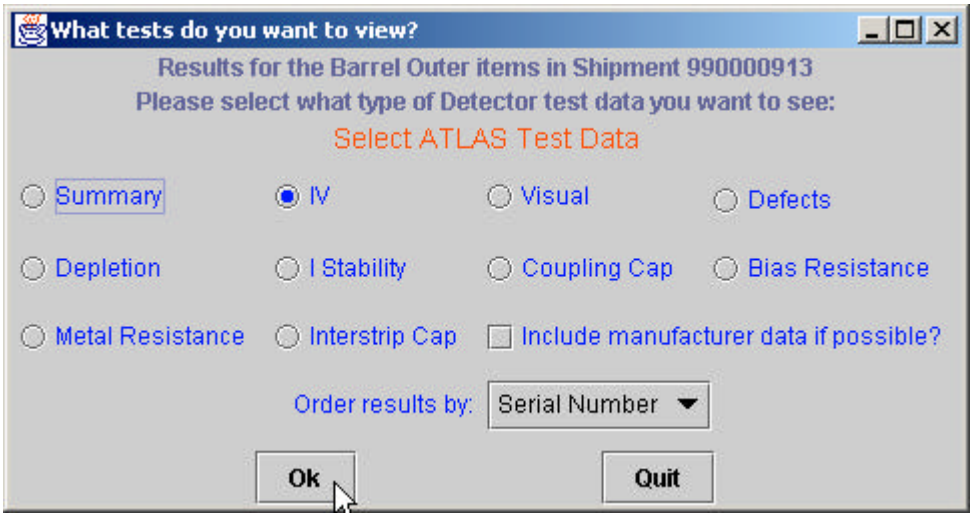


Test Results, Test Status, and Items queries become available for a shipment if you select the row:

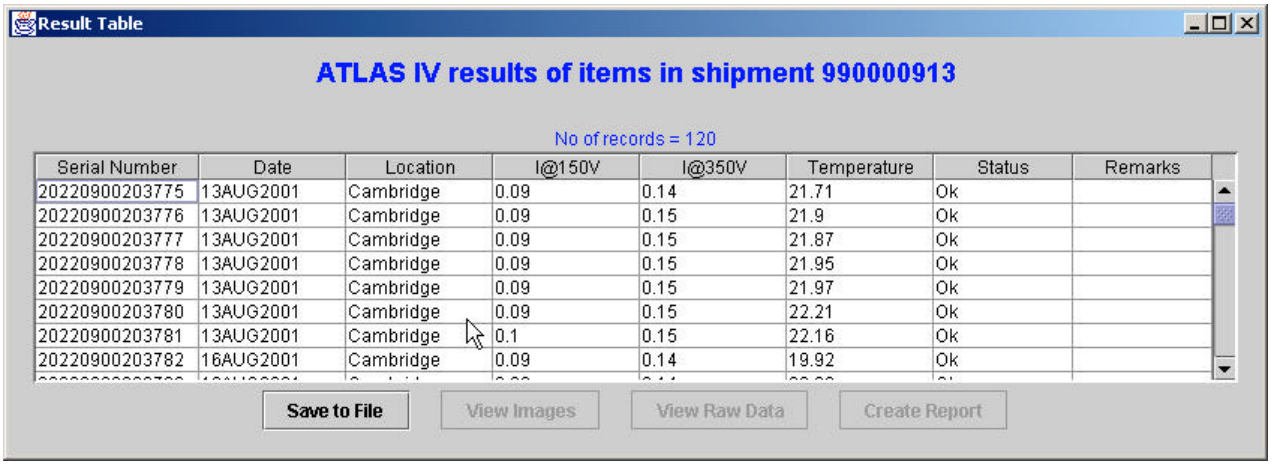


Eg to list the IV data for all items in this shipment, select “IV” in Test Data Selection panel, and click on “Test Results” button

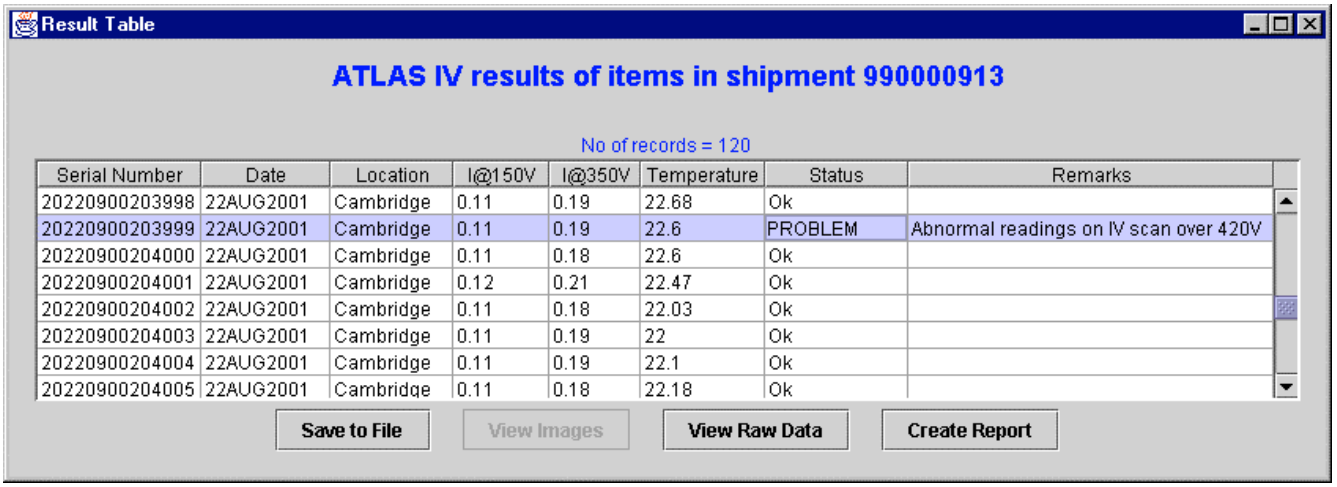
To view any test results, click on ‘Test Results’, and then select which test results you want to view in the popup dialogue box

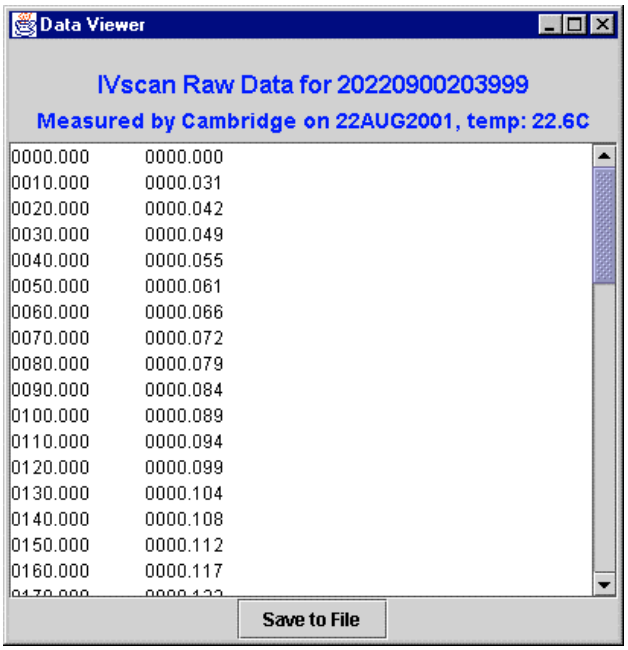


Clickin on ‘Ok’ will open a new window containing all the data in a spreadsheet:



Then select a row to extract even more information:

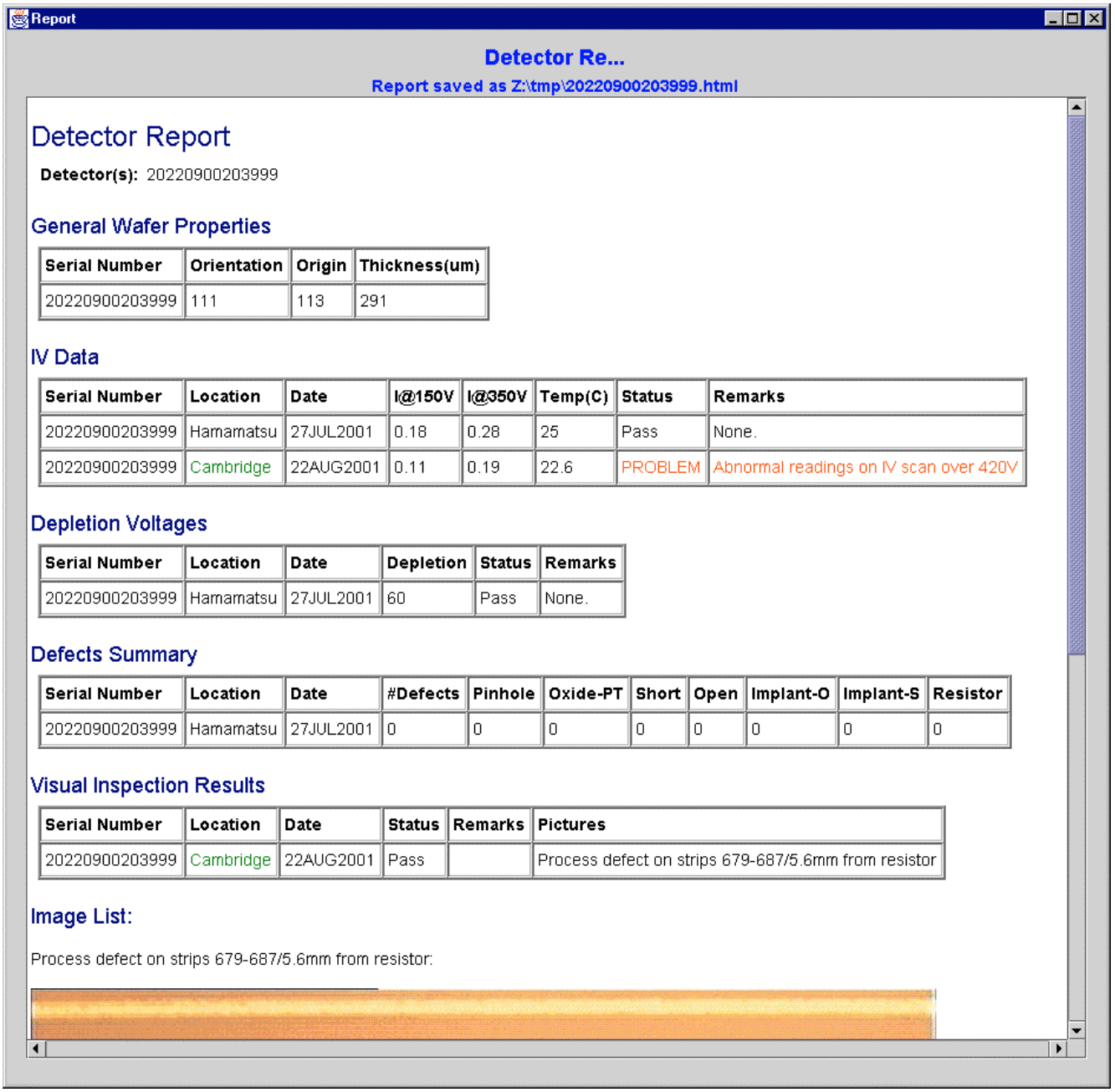




View the raw data

Generate full test report on this device

Full Test Report option generates an HTML file, and opens a java-equivalent web browser:



Report can be viewed by any web browser (IE, netscape...) and over the web if GUI is configured appropriately.

Visual inspection results for all items in a shipment:

Result Table

ATLAS Visual Inspection results of items in shipment 990000913

No of records = 126

Serial Number	Date	Location	Status	Remarks	Pictures
20220900204021	23AUG2001	Cambridge	Ok		
20220900204066	23AUG2001	Cambridge	Ok		
20220900204067	23AUG2001	Cambridge	Ok		
20220900204068	23AUG2001	Cambridge	Ok		Process defect on strip 173/11.8mm from resistor
20220900204068	"	"	"	"	Process defect top left hand edge
20220900204069	23AUG2001	Cambridge	Ok		
20220900204070	23AUG2001	Cambridge	Ok		
20220900204071	24AUG2001	Cambridge	Ok		

Save to File | View Images | View Raw Data | Create Report

To view any images, select the row and click on “View Images”, to launch an “image viewer”:

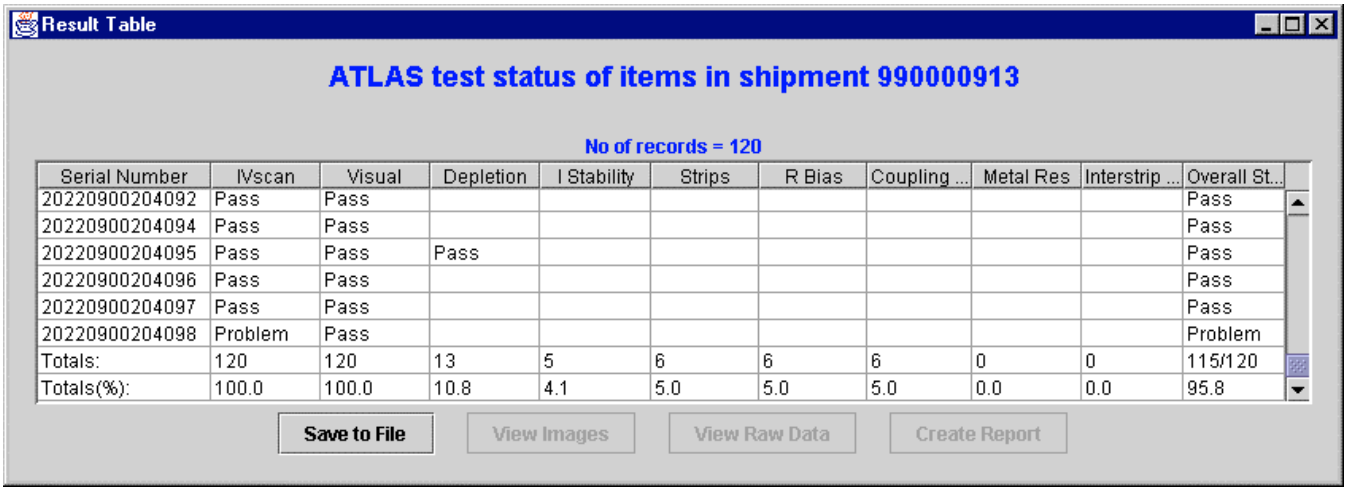
Image Viewer

Visual Inspection of 20220900204068 at Cambridge on 23AUG2001

Picture 1 of 2: Process defect on strip 173/11.8mm from resistor

Previous | Next | Save Image

Test Status Reports


Result Table

ATLAS test status of items in shipment 990000913

No of records = 120

Serial Number	IVscan	Visual	Depletion	I Stability	Strips	R Bias	Coupling ...	Metal Res	Interstrip ...	Overall St..
20220900204092	Pass	Pass								Pass
20220900204094	Pass	Pass								Pass
20220900204095	Pass	Pass	Pass							Pass
20220900204096	Pass	Pass								Pass
20220900204097	Pass	Pass								Pass
20220900204098	Problem	Pass								Problem
Totals:	120	120	13	5	6	6	6	0	0	115/120
Totals(%):	100.0	100.0	10.8	4.1	5.0	5.0	5.0	0.0	0.0	95.8

Save to File | View Images | View Raw Data | Create Report

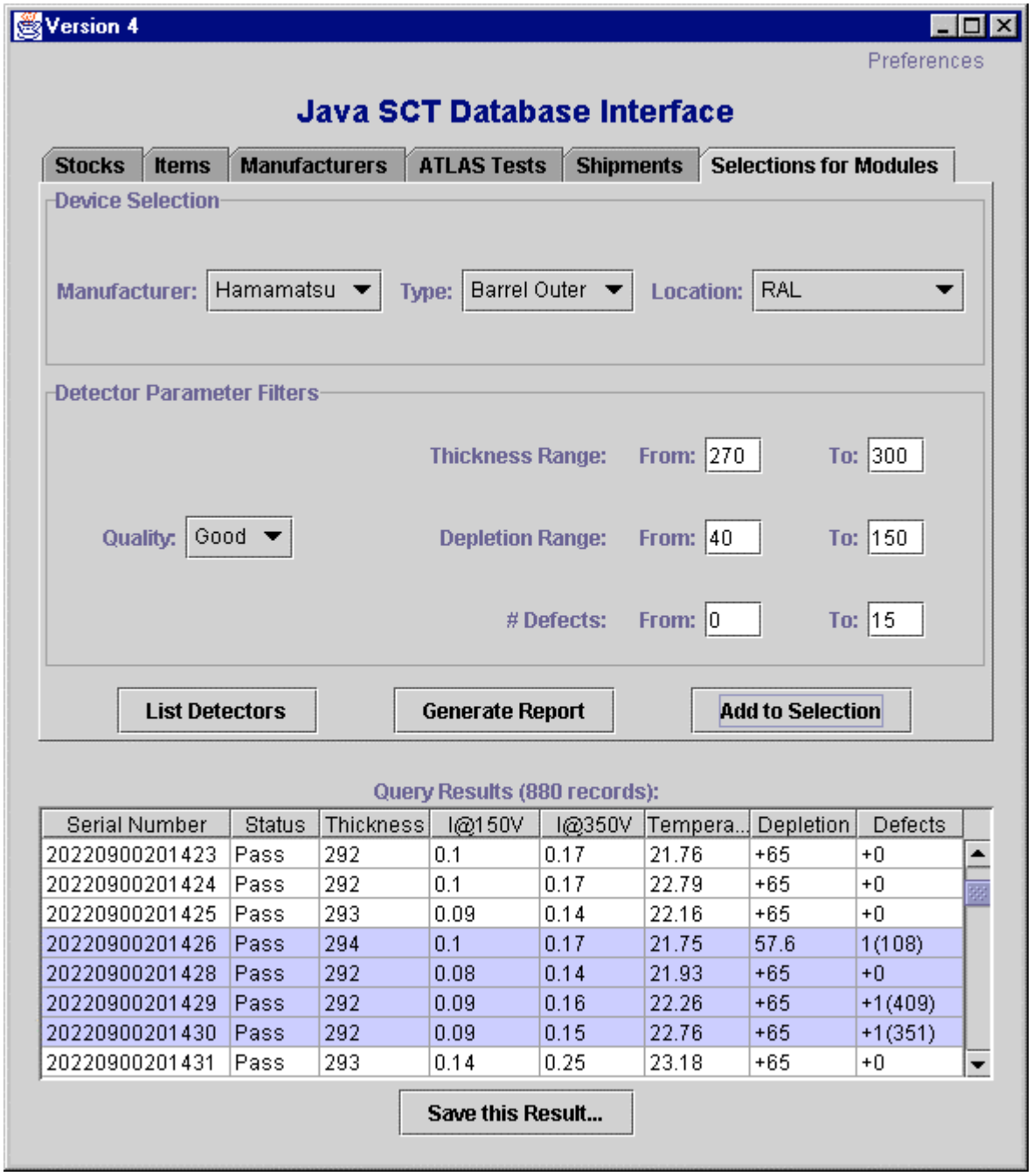
Lists what tests have been performed on each detector, and the status of that test (“Pass”, “Problem” or “FAIL”), together with overall statistics.

Overall status flag:

- “Pass” if all tests were good, AND both and IVscan and a visual inspection have been performed
- “Problem” if one or more tests showed a problem, AND both an IVscan and visual inspection have been performed
- “FAIL” if any test failed
- “Pending” if either an IVscan or visual examination is still pending

Selections for Modules

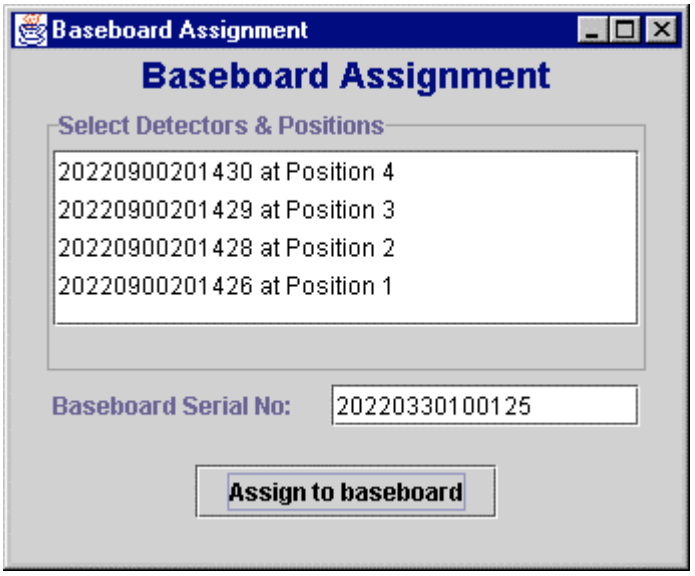
You need a list of all non-assembled devices at your institute, of a specified manufacturer, shape, quality and satisfying a specified range of parameters:



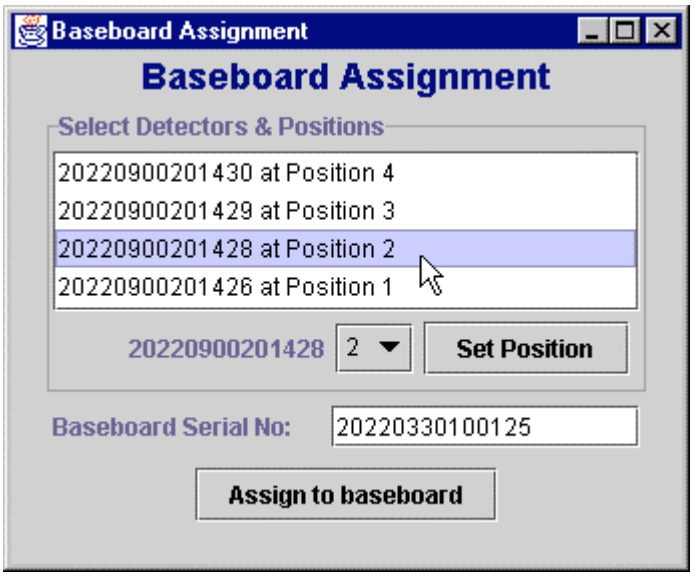
Serial Number	Status	Thickness	I@150V	I@350V	Tempera...	Depletion	Defects
20220900201423	Pass	292	0.1	0.17	21.76	+65	+0
20220900201424	Pass	292	0.1	0.17	22.79	+65	+0
20220900201425	Pass	293	0.09	0.14	22.16	+65	+0
20220900201426	Pass	294	0.1	0.17	21.75	57.6	1(108)
20220900201428	Pass	292	0.08	0.14	21.93	+65	+0
20220900201429	Pass	292	0.09	0.16	22.26	+65	+1(409)
20220900201430	Pass	292	0.09	0.15	22.76	+65	+1(351)
20220900201431	Pass	293	0.14	0.25	23.18	+65	+0

Select one or several detectors from the list, to assign to a baseboard or simply to generate more test information.

Baseboard assignment dialog

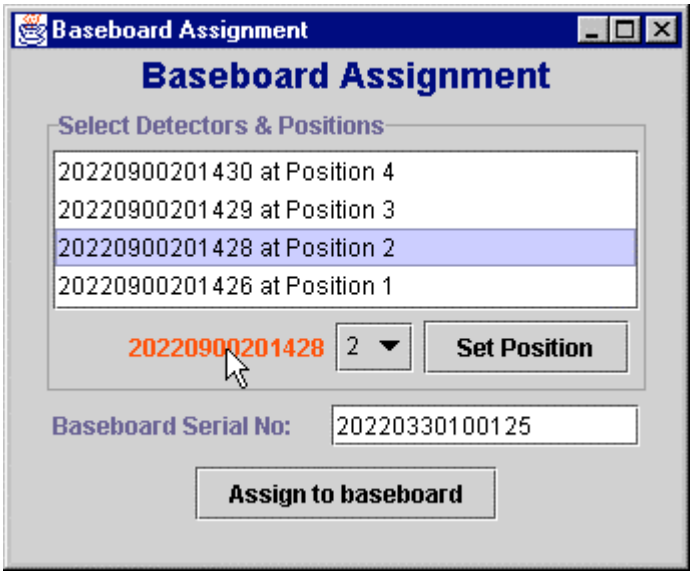


The software automatically assigns positions as you assign detectors to the baseboard.



But you can change the position on the baseboard by:

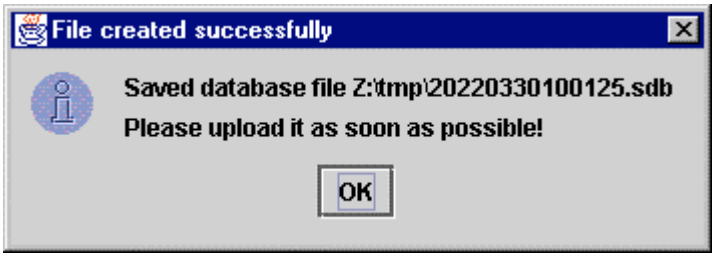
1 selecting a row
2 use menu to assign new position
3 Click on ‘Set Position’



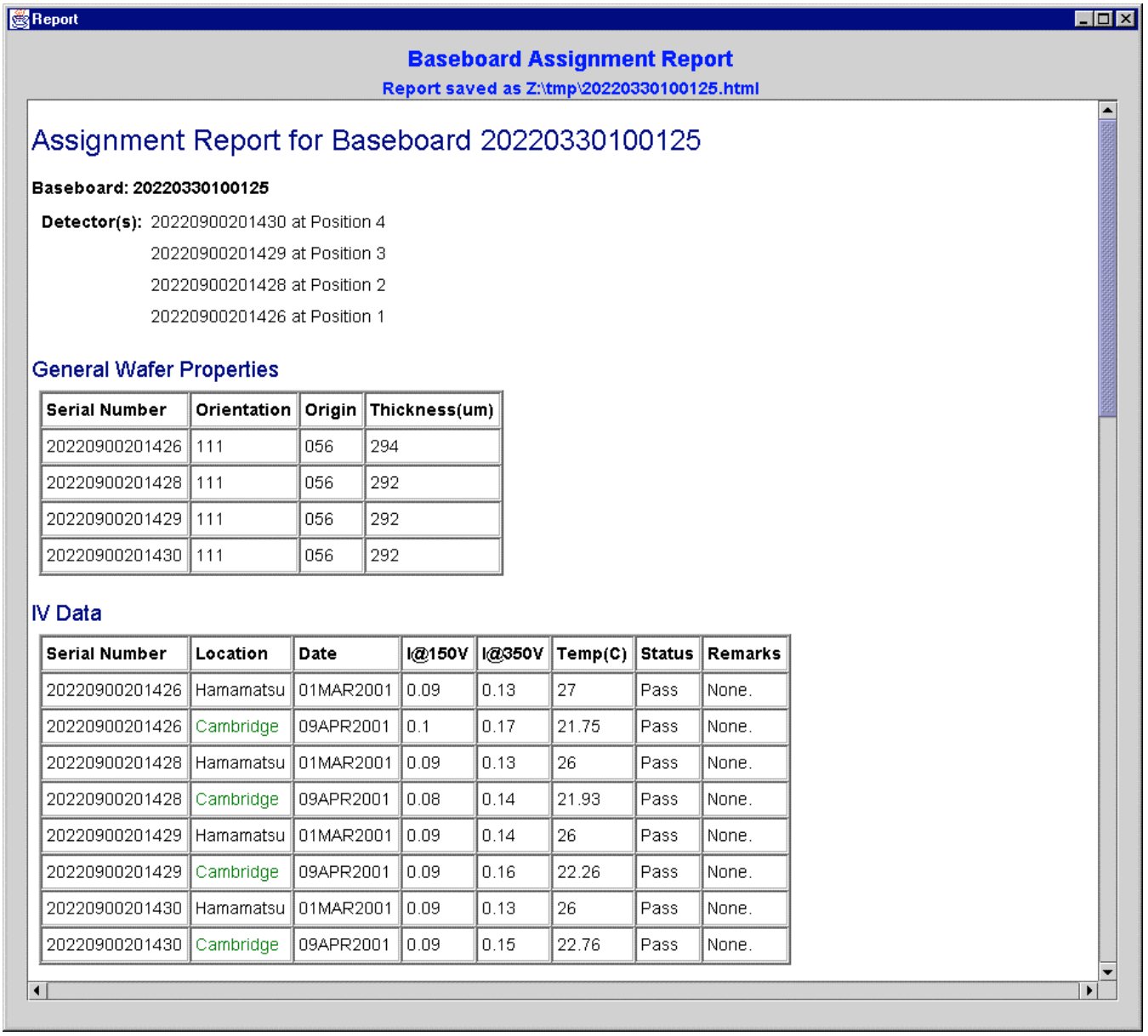
Alternatively you can remove a detector from the list, by

1 selecting a row
2 click on the detector serial number next to the menu

If you wish to proceed with the assignment, the appropriate database file is generated:



Together with a full report as an HTML document:



(continuation of assignment report, showing inclusion of test images as well as result tables:)

Report

Baseboard Assignment Report

Report saved as Z:\tmp\20220330100125.html

Serial Number	Location	Date	Depletion	Status	Remarks
20220900201426	Hamamatsu	01MAR2001	65	Pass	None.
20220900201426	Cambridge	09APR2001	57.6	Pass	None.
20220900201428	Hamamatsu	01MAR2001	65	Pass	None.
20220900201429	Hamamatsu	01MAR2001	65	Pass	None.
20220900201430	Hamamatsu	01MAR2001	65	Pass	None.

Defects Summary

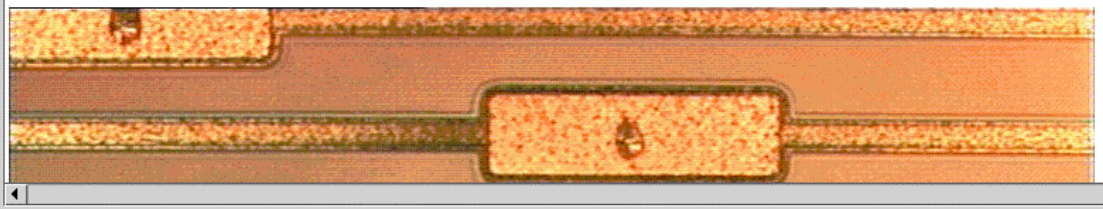
Serial Number	Location	Date	#Defects	Pinhole	Oxide-PT	Short	Open	Implant-O	Implant-S	Resistor
20220900201426	Hamamatsu	01MAR2001	1	1 (108)	0	0	0	0	0	0
20220900201426	Cambridge	17APR2001	1	1 (108)	0	0	0	0	0	0
20220900201428	Hamamatsu	01MAR2001	0	0	0	0	0	0	0	0
20220900201429	Hamamatsu	01MAR2001	1	1 (409)	0	0	0	0	0	0
20220900201430	Hamamatsu	01MAR2001	1	1 (351)	0	0	0	0	0	0

Visual Inspection Results

Serial Number	Location	Date	Status	Remarks	Pictures
20220900201426	Cambridge	09APR2001	Pass		
20220900201428	Cambridge	09APR2001	Pass		
20220900201429	Cambridge	09APR2001	Pass		
20220900201430	Cambridge	09APR2001	Pass		Blemish/discolourisation across strips 750-760

Image List:

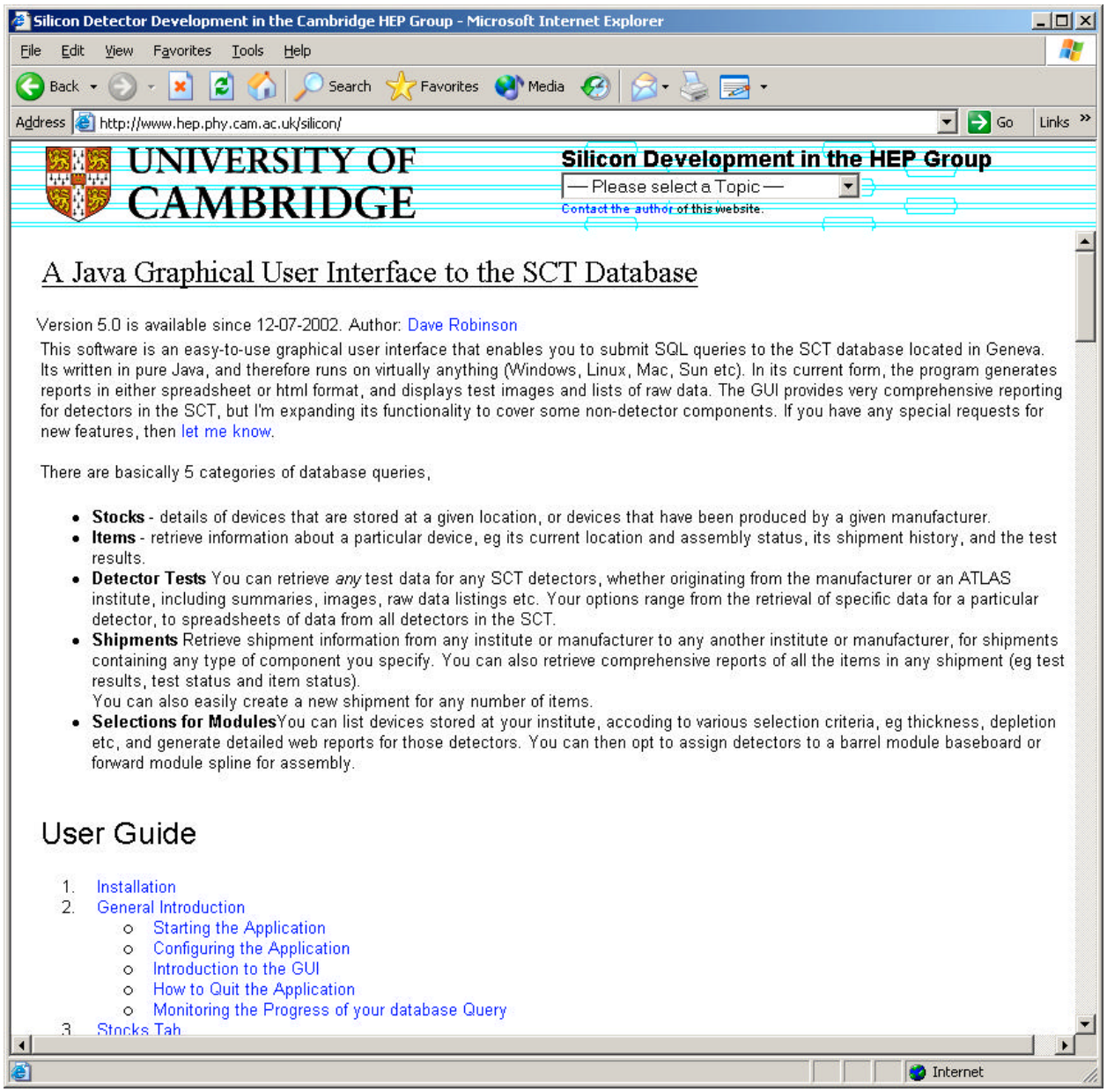
Blemish/discolourisation across strips 750-760:



Installation and User Guide

www.hep.phy.cam.ac.uk/silicon

- You need Java 1.2 or later (either JDK or JRE)
- Single file from Geneva database web page - contains JDBC classes
- Single file from Cambridge



Developing your own Application

There are 3 options:

- write your own application, using your favorite programming language (eg java, perl, C++ etc or even Excel). If you use java, I or Didier can provide a simple template upon which you can build your application.

- Use existing java GUI as a template for your own GUI (you can download all the source code from the Cambridge silicon website)

- I could perhaps extend functionality of existing GUI to cover your needs, if you tell me what you want