Collared Coil Database

(Contractor's version)

USERS MANUAL

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Introduction.

During each mechanical test on the layers and poles the measured values are recorded using CERN - supplied hardware (Pole measuring machines), which produce sets of files containing the detailed measurement raw data. For monitoring the layers and the pole azimuthal length, the raw data need to be treated and normalized in standard format. CERN will supply the Contractor with software (Post-Processor) that will treat the raw data files and do an automatic upload of converted data into the *Collared coil database*. The *Collared coil database* is a part of traveller database and will be used as a first step in the process of storing the information in the CERN EDMS system. The database was designed using MS Access (MS Office 2000) and the data entry is executed via a user-friendly PC interface that will be provided to the Contractor by CERN. The architecture of the database was designed assuming that the measurement steps follow the sequence given in the Dipole Assembly Workflow Diagram (see figure 2). The operation, which generates each data item in the database, is identified in parentheses in the data entry form. For the traceability purpose, the names of original raw data files will be saved in the tables of database and their copies will be attached to the traveller. The summary results on some of the measurements steps need to be reported to CERN for an approval before the next assembly step is proceeding. Therefore the database as supplied to Contractor includes a facility to email the data to CERN for an approval and to mark the accepted data as approved. The database includes also the retrieve forms and the main parameters summary reports, which will be used as traveller pages.

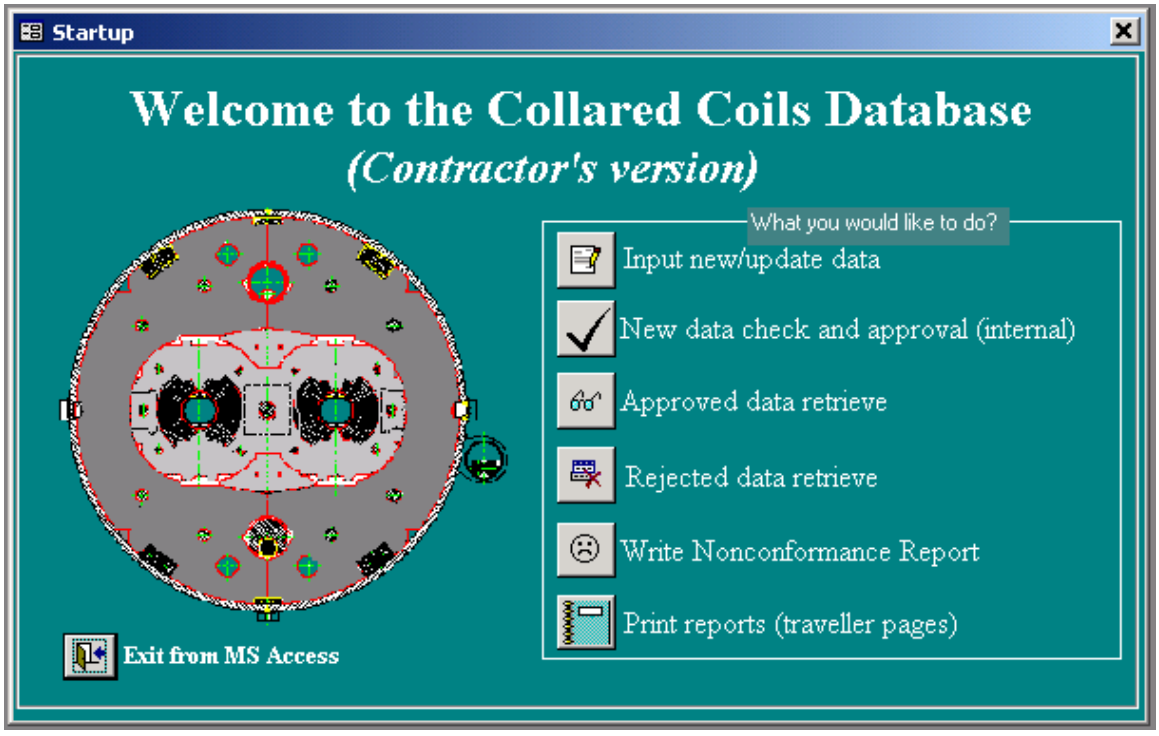


Figure 1 (the Database Main switchboard)

In order to make easy navigation through varies number of forms the Database is subdivided into several layers. Each of these layers is managed by corresponding them switchboards. The Main switchboard shown in figure 1. In figure 2 shows the sub-switchboards (Input new/update data), where the Dipole Assembly Workflow Diagram is used as a sub-switchboard to navigate easy in the Database.

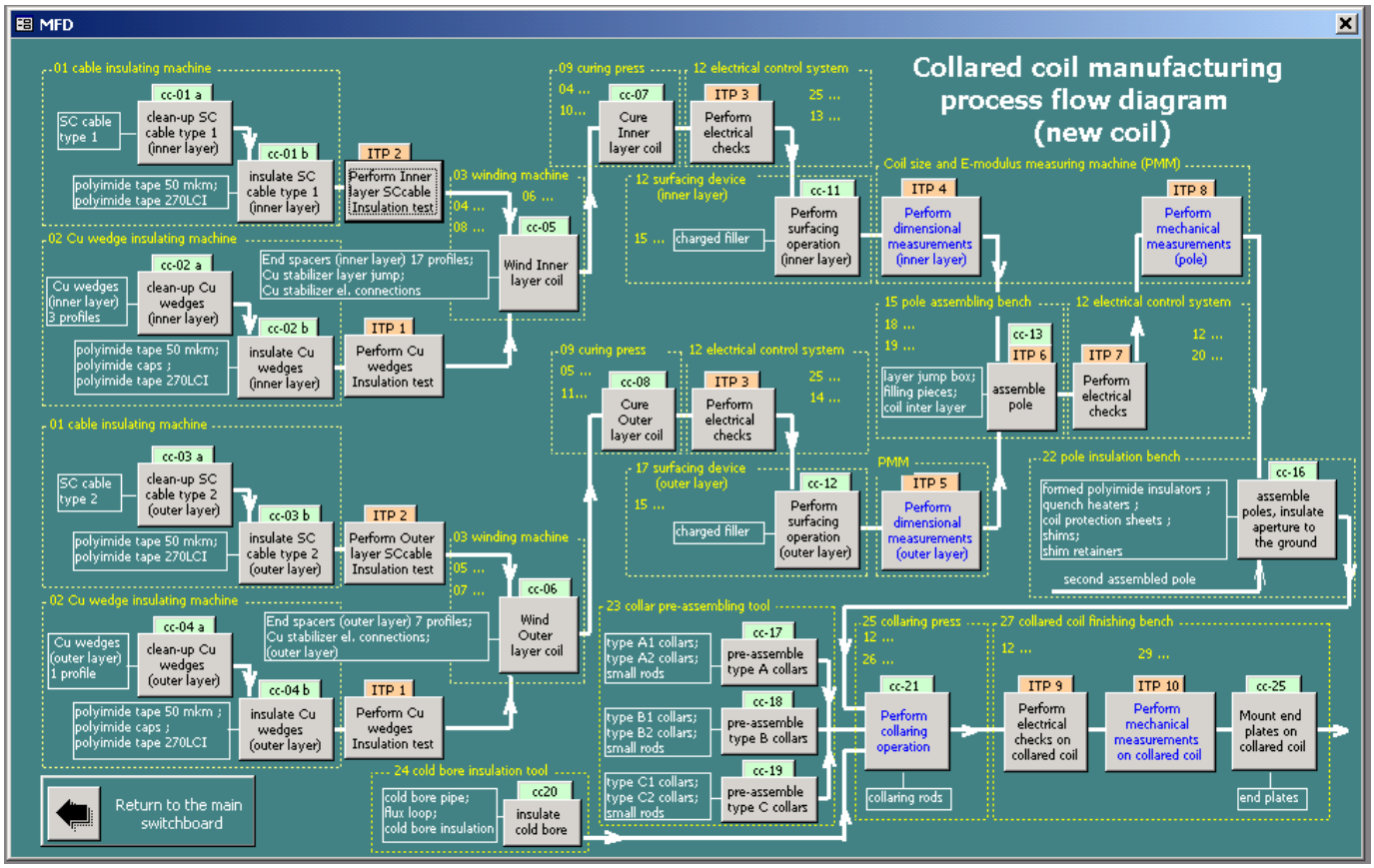


Figure 2 (Input new/update data sub-switchboard)

Measurements data three steps internal check and external approval procedure.

First step: gathering new data, internal checks and transfer to CERN for approval (Contractor's Database).

1. Test operator (later User) opens the form "**New_Pole_Form**" (figure3) and by pressing the button "**Import new data**" creates a new record in the "**Pole_assembly_table**". In case of error, user can erase the imported data by pressing "Delete this record" button.

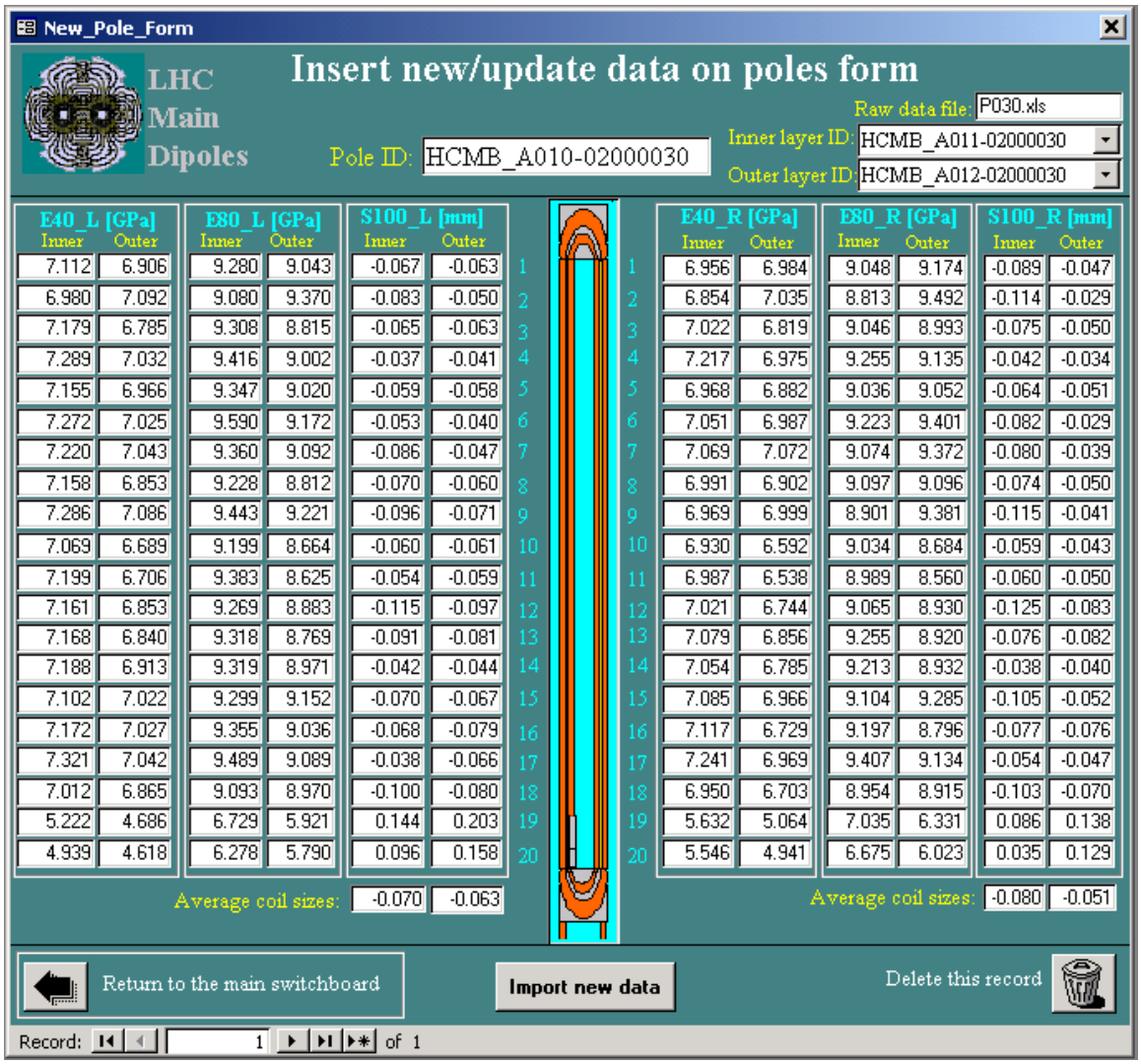


Figure 3

"Import new data on poles" macro imports the data from the C:\Collared Coil Database\Conractor\Pole_transfer.txt file (created by CERNPP, see manual for Post-Processor software) and creates a new record in the "Pole_assembly_table".

2. The new data need first to be checked and validated by Contractor's Responsible. The Responsible perform this check through the form "**Check the data on poles**" (figure 4). If the data is acceptable, he has to press the button "**Validate**", otherwise if the data is not correct or considered to be rejected - he has to press the "**Reject**" button. In both cases he will be prompt first to type into the form the date and his name.

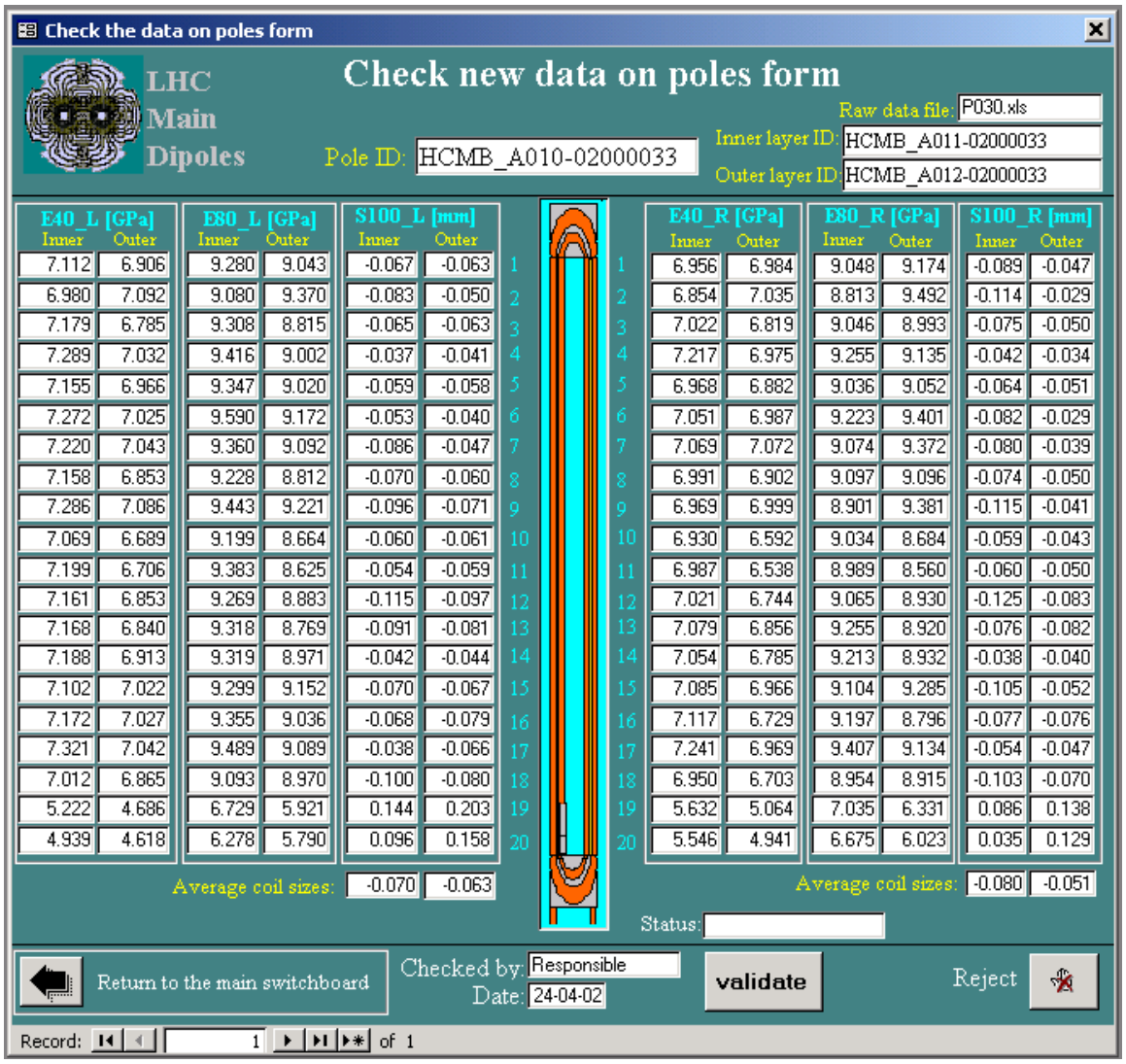


Figure 4

In case of "validate" action, the macro "Check the pole" does followings: first it runs the "Set_as_Waiting_ap_pole_Query", which updates the "status of the layer" field in the "Pole_assembly_table" to the "Waiting_for_approval" value; then it transfers current record to the "Waiting_ap_pole_table" (waiting for approval pole table), after that it runs the macro "Pole_data_transfer_to_CERN_macro",which E-mails the data from "Waiting_ap_pole_table" to CERN; and finally it runs the "Checked pole delete query" which deletes the record on this layer from the "Waiting_ap_pole_table".

In case of "reject" action, the macro "Reject the Inner Layer" does followings: first it runs the "Set_as_rejected_inner_layer" query, which updates the "status of the

layer" field in the "Inner_layers_table" to the "Rejected_layer" value; runs the "Transfer rejected inner layer query", which transfers current record to the "Rejected_inner_layers_t" table and runs "New_inner_layer_delete_query", which deletes the record on this layer from the "Inner_layer_table".

Second step: data approval at CERN and re-transfer to Contractor (CERN's Database).

1. At CERN, the Responsible receives the E-mail named as "**New data on poles**" (figure 5) with an Excel file "*Waiting_ap_pole_table.xls*" as an attachment. This file contains the data on new pole. The Responsible has first to save this file under the C:\Collared Coil Database\CERN\folder as it shown below (the procedure is written in the body of this e-mail).

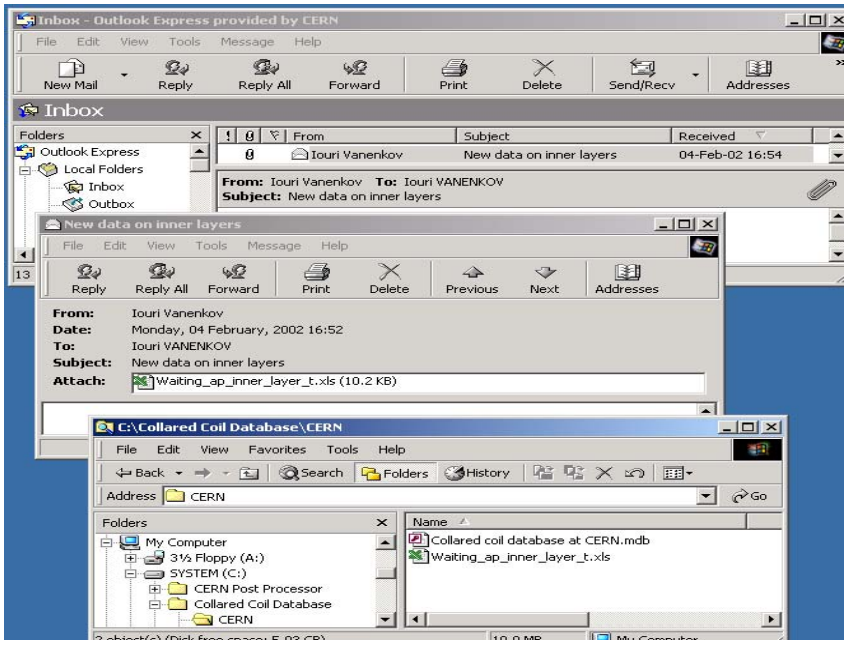


Figure 5

2. The CERN Responsible uses the "**Approval_data_on_poles**" Form (figure 6) to do an approval or to reject the new data. In this form the button "**Load data waiting for approval**" is used to import new data from the Excel file into CERN database. If the data is acceptable, the Responsible has to press the button "**approval**", otherwise, if the data is not correct or this pole has to be rejected - he has to press the "**Reject this pole**" button. In both cases he will be prompt to type into the form the date and his name.

Figure 6

The "Load new data" button executes the "Import data on pole assembly" macro, which imports the data from the "Waiting_ap_pole_table.xls" Excel file into the "Waiting_ap_pole_table".

In case of "Approval" action, the "Pole approval Macro" does followings: first it runs the "Set_as_approved_pole_Query", which updates the "status of the pole" field in the "Waiting_ap_pole_table" to the "Approved_pole" value; then it runs the

"Transfer_pole_query", which transfers current record to the "Approved_data_on_pole" table, runs the "Transfer_approved_pole"query, which transfers current record to the "Approved_pole" table; then it exports the data on approved layer into an Excel file, named as "Approved_pole.xls" and E-mails this file back to Contractor marked as "Approved pole"; then it runs the "Delete the approved pole query", which deletes the record on this pole from the "Waiting_ap_pole_table" and finally it runs the "Delete_approved_pole" query, which deletes the record on this pole from the "Approved pole" table.

In case of "reject" action, the macro "Pole reject macro" does followings: first it runs the "Set_as_rejected_pole_Query", which updates the "status of the pole" field in the "Waiting_ap_pole_table" to the "Rejected_pole" value; then it runs the "Reject_pole_query", which transfers the record on this pole to the "Rejected_pole" table; exports the data on rejected layer into an Excel file, named as "Rejected_pole.xls" and E-mails this file back to Contractor marked as "Rejected pole", then it runs the "Transfer rejected pole query", which transfers the record on rejected pole to the "Rejected_poles" table; runs "Delete_rejected_pole_query", which deletes this record from the "Rejected_pole" table and, finally runs the "Delete the approved pole query", which deletes this record from the "Waiting_ap_pole_table".

Third step: Contractor's Database update with the approved (rejected) data

1. The Contractor's Responsible receives an E-mail with attachment, containing an Excel ("*Approved_data_on_poles.xls*" or "*Rejected data on poles.xls*") file with the approved or rejected data (figure 7). In order to update the database, Responsible has first to save this file under the C:\Collared Coil Database\Contractor\folder and then import the data into database thought the "**Data on poles retrieve**" or "**Rejected poles retrieve**" form (all instructions are written in the body of the mail).

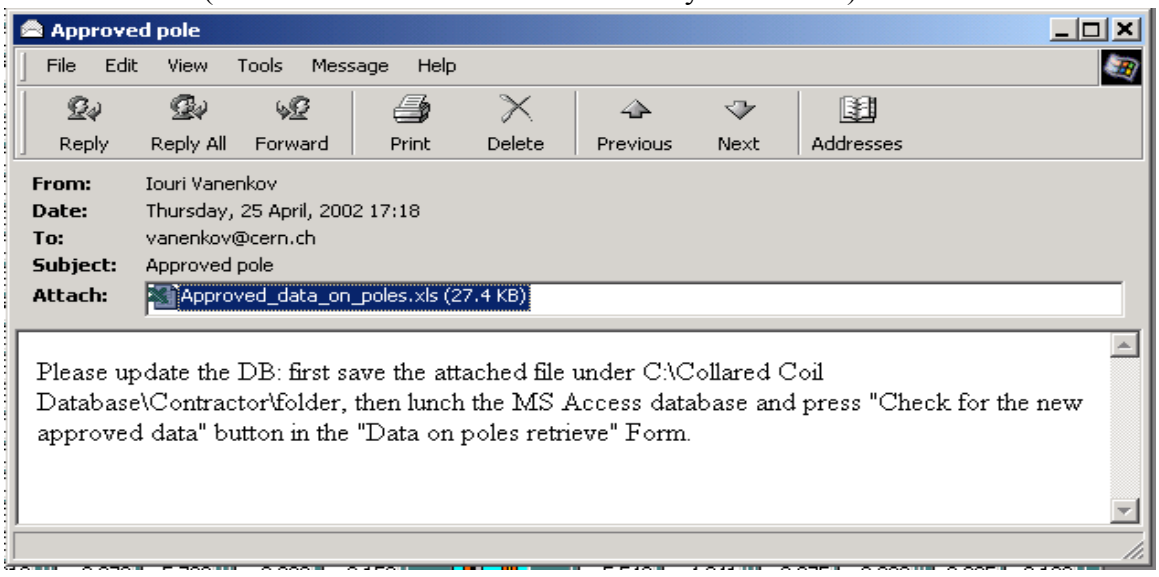


Figure 7

2. The Contractor's Responsible updates the database through the "**Data on the poles retrieve**" form (figure 10) or "**Rejected poles retrieve** " form (figure 11). He could access these form through the corresponding switchboard: "**Approved Data Retrieve Switchboard**" (figure 8) or "**Rejected data retrieve Switchboard**" (figure 9). For example, in case of approved data, in order to update the database the Responsible has to press the button "**Check for new approved data**" in "**Data on the poles retrieve**" form and the data will be imported into the "**Approved_poles_t"** table as a new record. It should be noticed, that since the data was approved by CERN and transferred to the Contractor's database, it is no longer accessible for editing and can be retrieved thought retrieve type forms only (all fields in these forms are protected against editing).

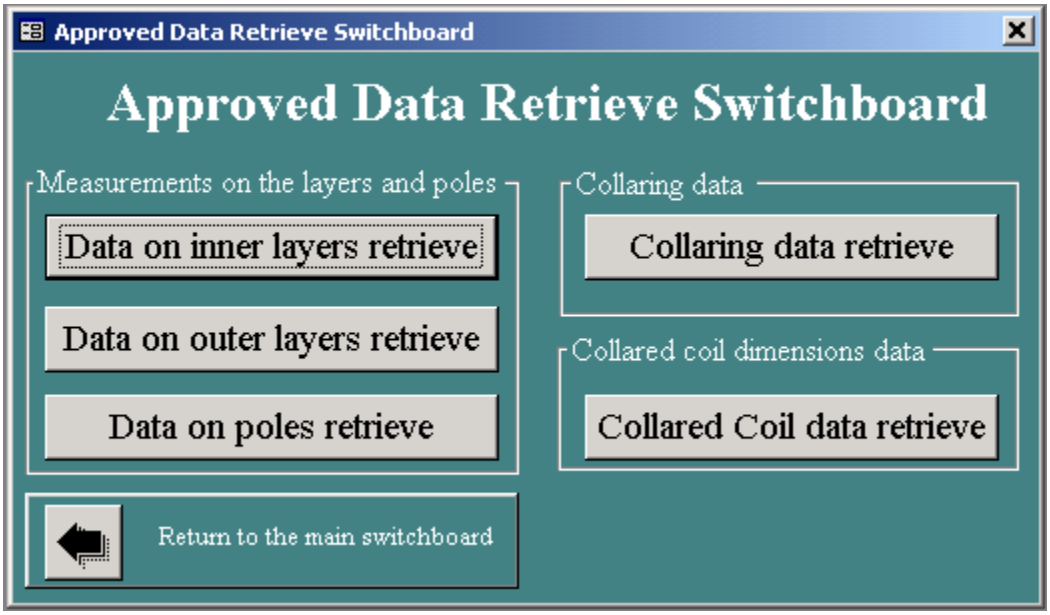


Figure 8

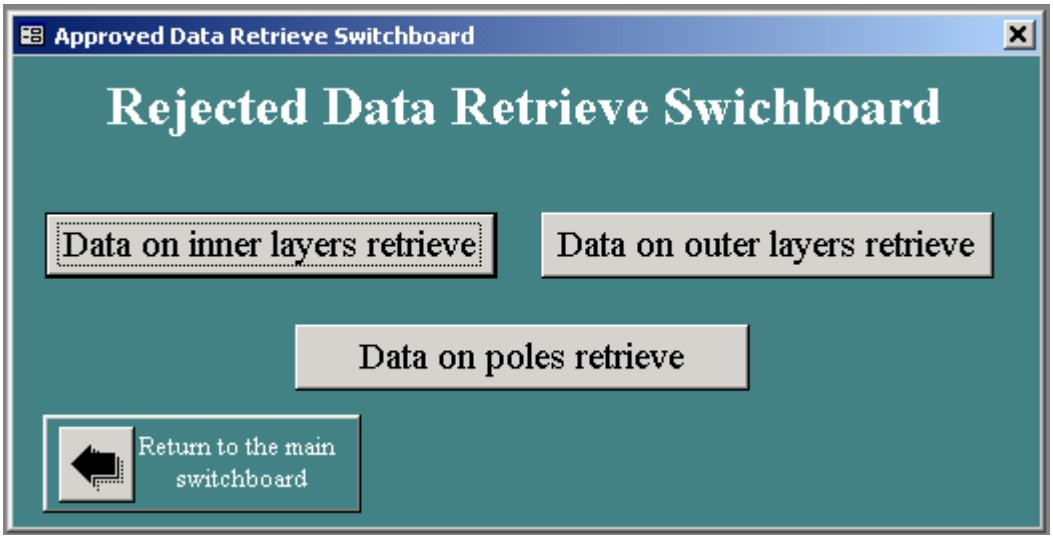


Figure 9

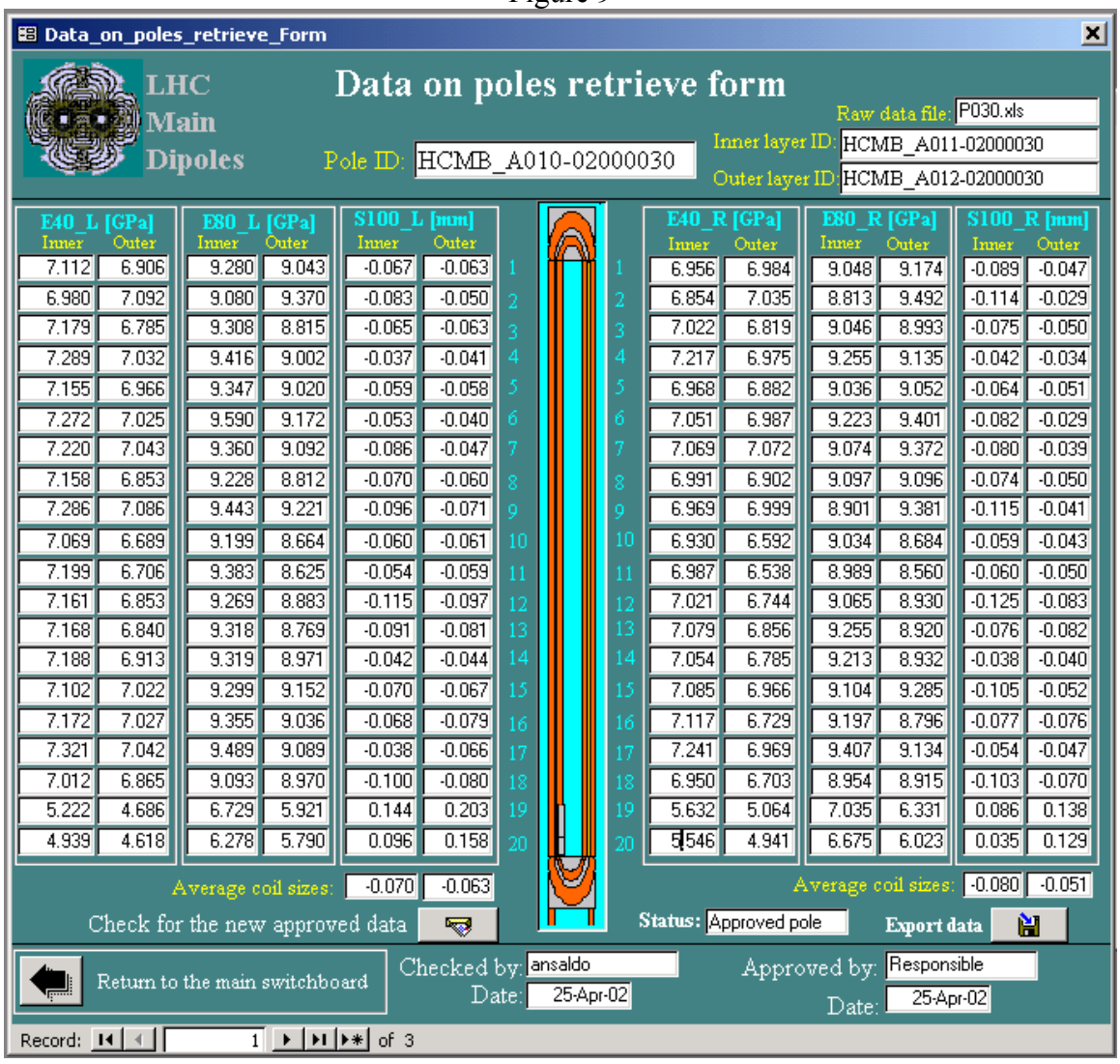


Figure 10

"Import approved pole" macro reads the approved data from the C:\Collared Coil Database\Conractor\Approved_pole.xls file and create a new record in the "Approved pole" table (flash-table), then it runs the "Transfer_approved_pole_query " which transfer this record to the "Approved_poles_t" table (principal table) and then it runs the "Delete_transfered_approved_pole_query" query, which deletes the corresponding record in the "Approved_pole" flash-table.

It should be noticed, that from this form, the user, by pressing the button "**Export data**" can export all approved data on poles into an Excel file *"Data_on_poles.xls",* which can be used as a source for statistical analysis (it can be found in *C:\Collared Coil Database\Contractor\folder).*

Figure 11

"Import rejected pole" macro reads the approved data from the C:\Collared Coil Database\Conractor\Rejected_pole.xls file and create a new record in the "Rejected pole" table (flash-table), then it runs the "Transfer_rejected_pole_query " which transfer this record to the "Rejected_poles_t" table (principal table) and then it runs the "Delete_transfered_rejected_pole" query, which deletes the corresponding record in the "Rejected_pole" flash-table.

The Contactor's database includes the main parameters summary reports, to be used as Traveller's pages. These reports are accessible through the "Print reports switchboard" (figure 12).

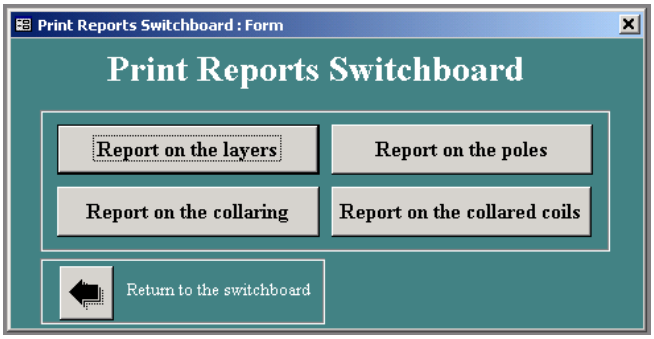
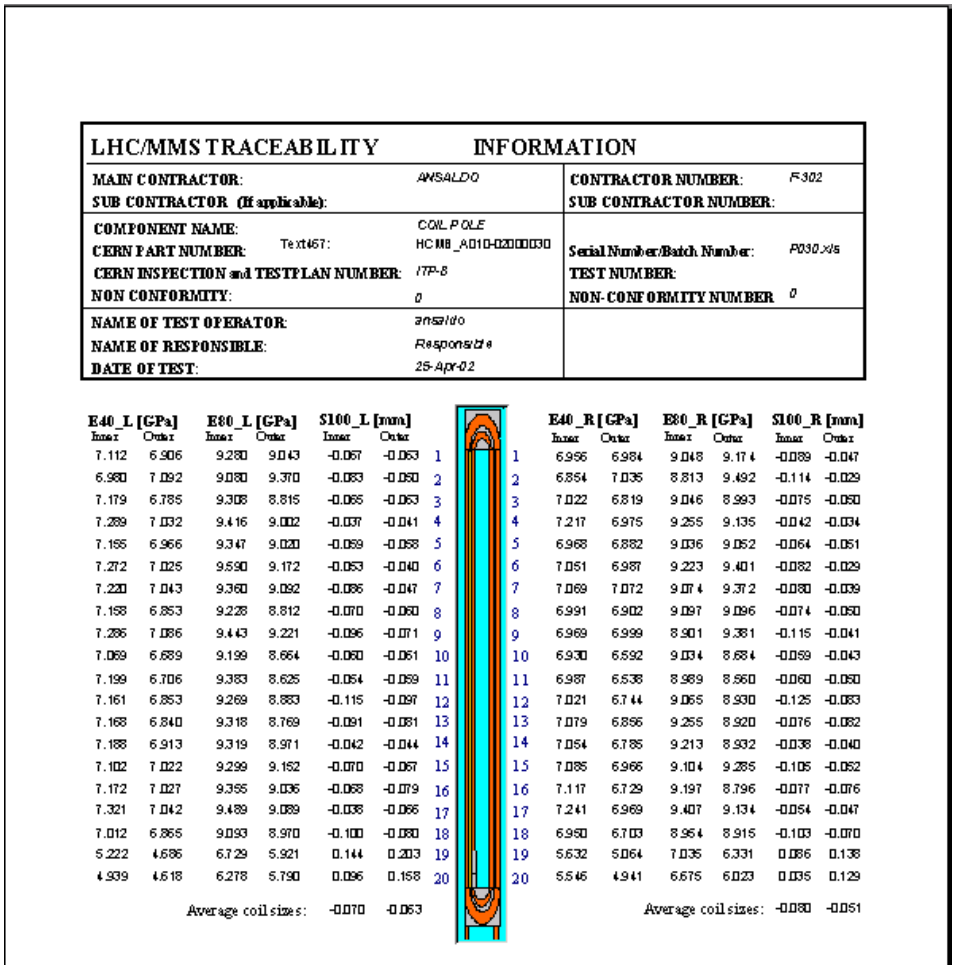


Figure 12



LHC/MMS TRACEABILITY INFORMATION

MAIN CONTRACTOR:	ANSALDO	CONTRACTOR NUMBER:	F302
SUB CONTRACTOR (If applicable):		SUB CONTRACTOR NUMBER:	
COMPONENT NAME:	COIL POLE		
CERN PART NUMBER: Text467:	HCMB_A010-02000030	Serial Number/Batch Number:	P030.xls
CERN INSPECTION and TESTPLAN NUMBER:	ITP-8	TEST NUMBER:	
NON CONFORMITY:	0	NON-CONFORMITY NUMBER	0
NAME OF TEST OPERATOR:	ansaldo		
NAME OF RESPONSIBLE:	Responsible		
DATE OF TEST:	25-Apr-02		

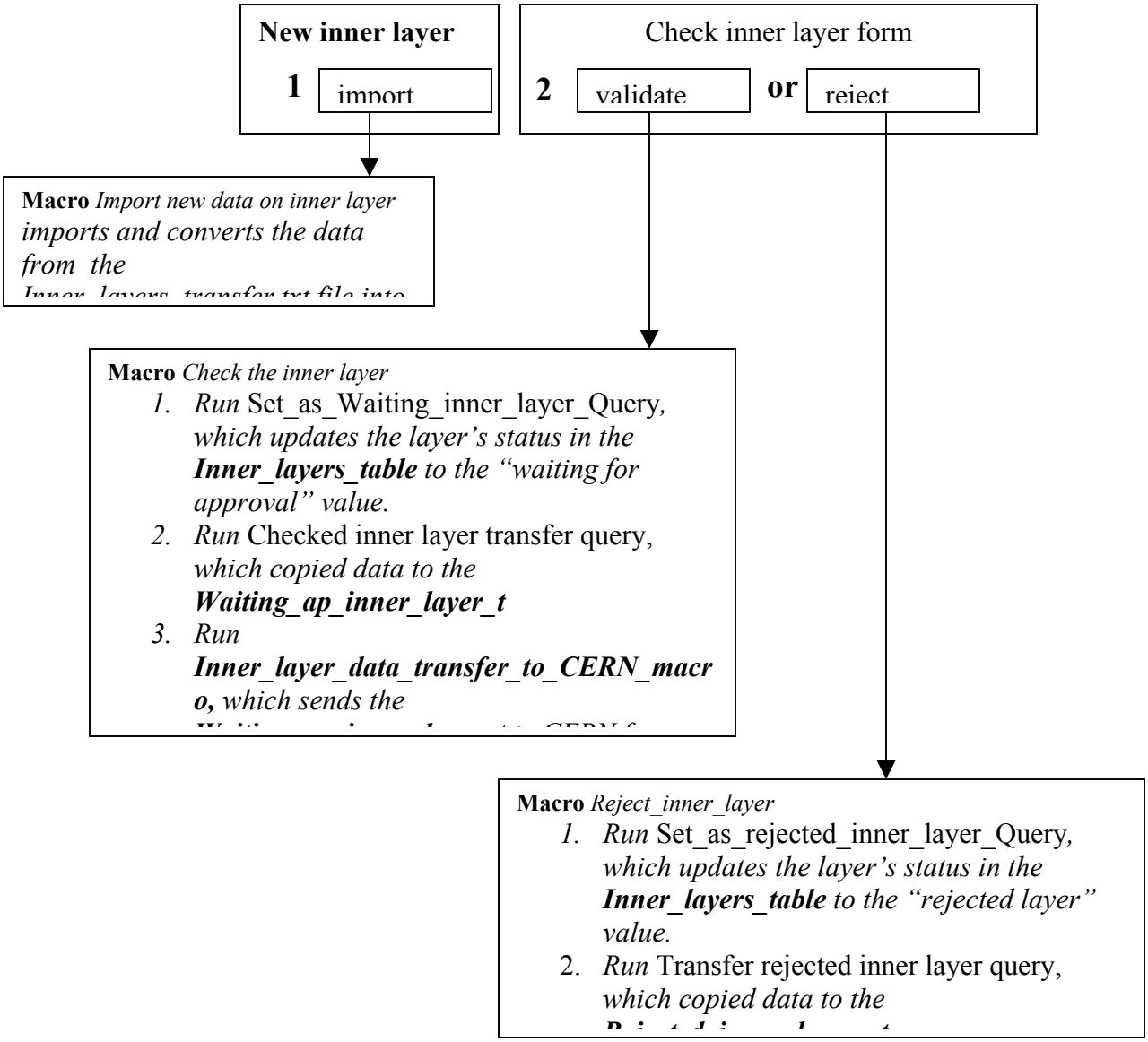
E40_L [GPa] Inner	E40_L [GPa] Outer	E80_L [GPa] Inner	E80_L [GPa] Outer	S100_L [mm] Inner	S100_L [mm] Outer		E40_R [GPa] Inner	E40_R [GPa] Outer	E80_R [GPa] Inner	E80_R [GPa] Outer	S100_R [mm] Inner	S100_R [mm] Outer
7.112	6.906	9.280	9.043	-0.057	-0.053	1	1 6.956	6.984	9.048	9.174	-0.089	-0.047
6.980	7.092	9.080	9.370	-0.083	-0.050	2	2 6.854	7.035	8.813	9.492	-0.114	-0.029
7.179	6.785	9.308	8.815	-0.065	-0.053	3	3 7.022	6.819	9.046	8.993	-0.075	-0.050
7.289	7.032	9.416	9.002	-0.037	-0.041	4	4 7.217	6.975	9.255	9.135	-0.042	-0.034
7.165	6.966	9.347	9.020	-0.059	-0.058	5	5 6.968	6.882	9.036	9.052	-0.064	-0.051
7.272	7.025	9.590	9.172	-0.053	-0.040	6	6 7.051	6.987	9.223	9.401	-0.082	-0.029
7.220	7.043	9.360	9.092	-0.086	-0.047	7	7 7.069	7.072	9.074	9.372	-0.080	-0.039
7.168	6.853	9.228	8.812	-0.070	-0.060	8	8 6.991	6.902	9.097	9.096	-0.074	-0.050
7.286	7.036	9.443	9.221	-0.096	-0.071	9	9 6.969	6.999	8.901	9.381	-0.115	-0.041
7.069	6.889	9.199	8.664	-0.060	-0.061	10	10 6.930	6.592	9.034	8.684	-0.059	-0.043
7.199	6.706	9.383	8.625	-0.054	-0.059	11	11 6.987	6.538	8.989	8.560	-0.060	-0.050
7.161	6.853	9.269	8.883	-0.115	-0.097	12	12 7.021	6.744	9.065	8.930	-0.125	-0.083
7.168	6.840	9.318	8.769	-0.091	-0.081	13	13 7.079	6.856	9.255	8.920	-0.076	-0.082
7.188	6.913	9.319	8.971	-0.042	-0.044	14	14 7.054	6.785	9.213	8.932	-0.038	-0.040
7.102	7.022	9.299	9.152	-0.070	-0.067	15	15 7.085	6.966	9.104	9.285	-0.105	-0.052
7.172	7.027	9.355	9.036	-0.068	-0.079	16	16 7.117	6.729	9.197	8.796	-0.077	-0.076
7.321	7.042	9.489	9.089	-0.038	-0.066	17	17 7.241	6.969	9.407	9.134	-0.054	-0.047
7.012	6.865	9.093	8.970	-0.100	-0.080	18	18 6.950	6.703	8.954	8.915	-0.103	-0.070
5.222	4.686	6.729	5.921	0.144	0.203	19	19 5.632	5.064	7.035	6.331	0.086	0.138
4.939	4.618	6.278	5.790	0.096	0.158	20	20 5.545	4.941	6.675	6.023	0.035	0.129
Average coil sizes:				-0.070	-0.063		Average coil sizes:				-0.080	-0.051

Figure 13. Coil size/E-modulus measurements data Report

The reports can be made on approved data only. When user pressed the button "Print report", additionally to the hard copy, system creates an Excel file in a predefined format, containing summary data. This file is a subject to be attached to the electronic Traveller.

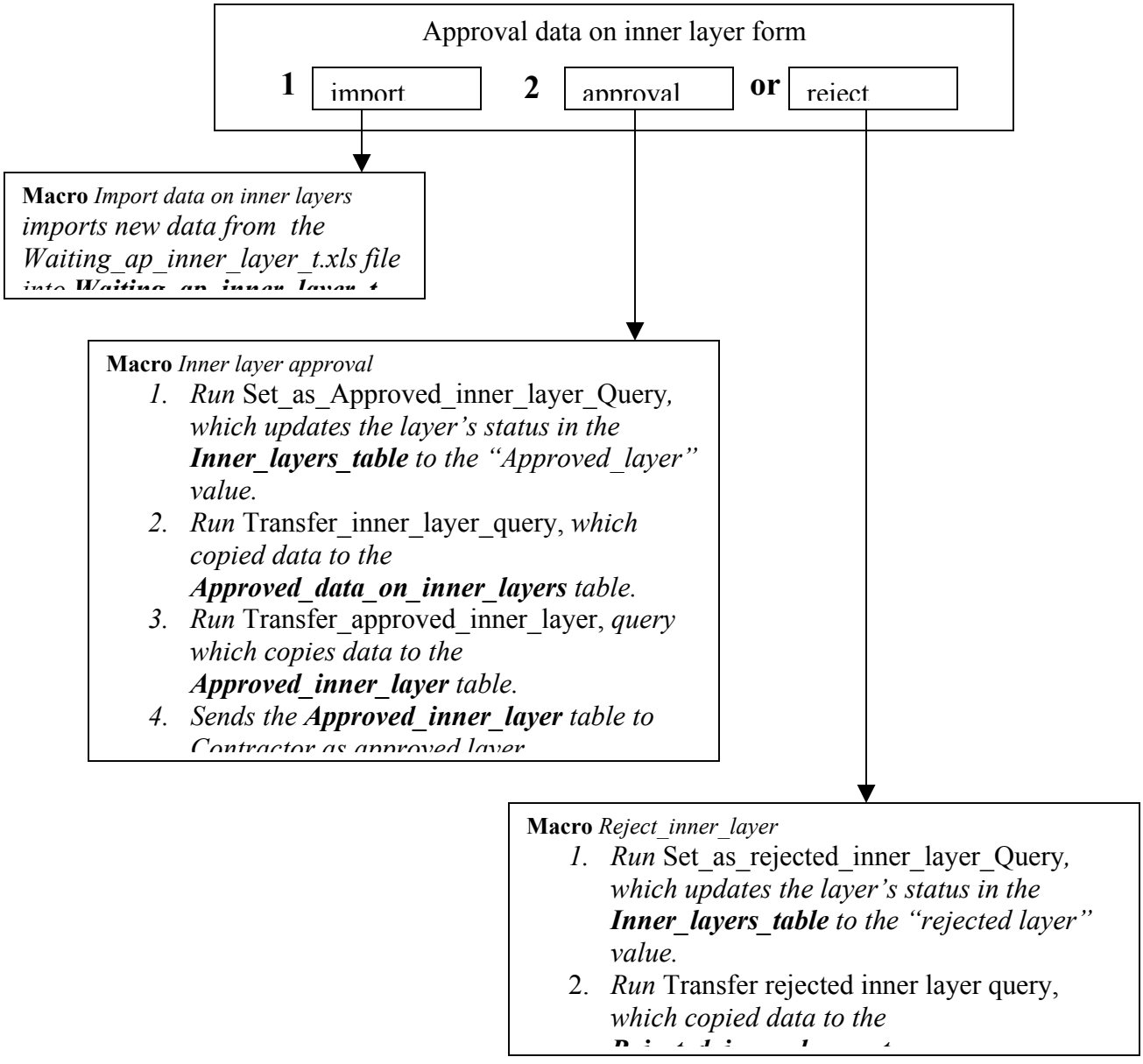
I step Contractor's Database

Gathering new data, and check



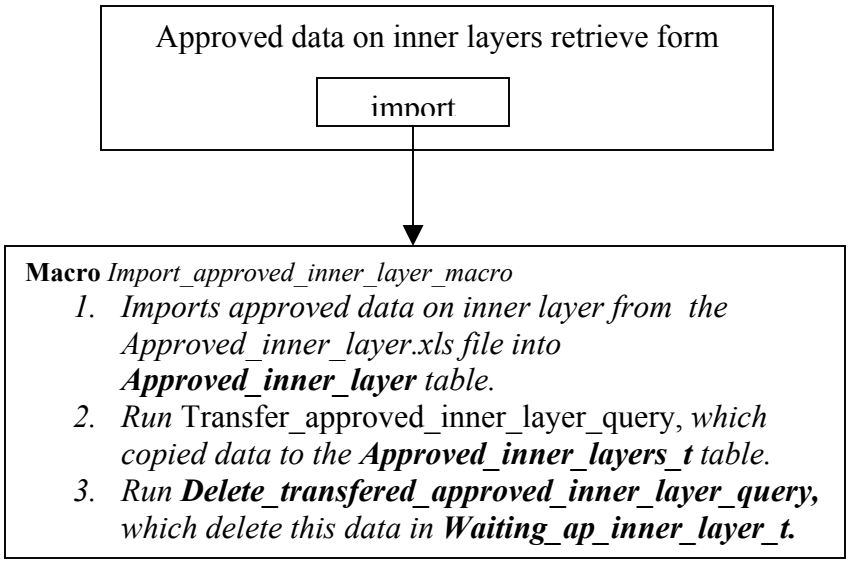
II step CERN Database

Gathering new data and approval



III step Contractor's Database

a) Approved data retrieve



b) Rejected data retrieve