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Central Monitoring and Detections Database

The Guyana Forestry Commission

ITTO Project: PD 440/07 Rev. 1

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Overview

The Guyana Forestry Commission (GFC) has decided to build a single interactive database that tracks timber and timber products through the supply chain – from the point of production to the point of export. This would therefore entail using some of the elements/software/databases that they currently have (production and export) and adding ones which they do not have – processing facilities.

Additionally, they would like this software to have a functionality to use bar coding technology to assist with timber tracking. Generally speaking, this means that users of the system should be able to scan a barcode into the application and it should produce details about the corresponding log tag.

This document seeks to detail the requirements of this system, pursuant to creating it.

Data Flow

This section details how data is intended to flow through the system, from the production application through the processing application which is to be built, to the export application. The diagram below shows the documents that will be used to support this system and where their data will be inputted, as well as the links between the applications.

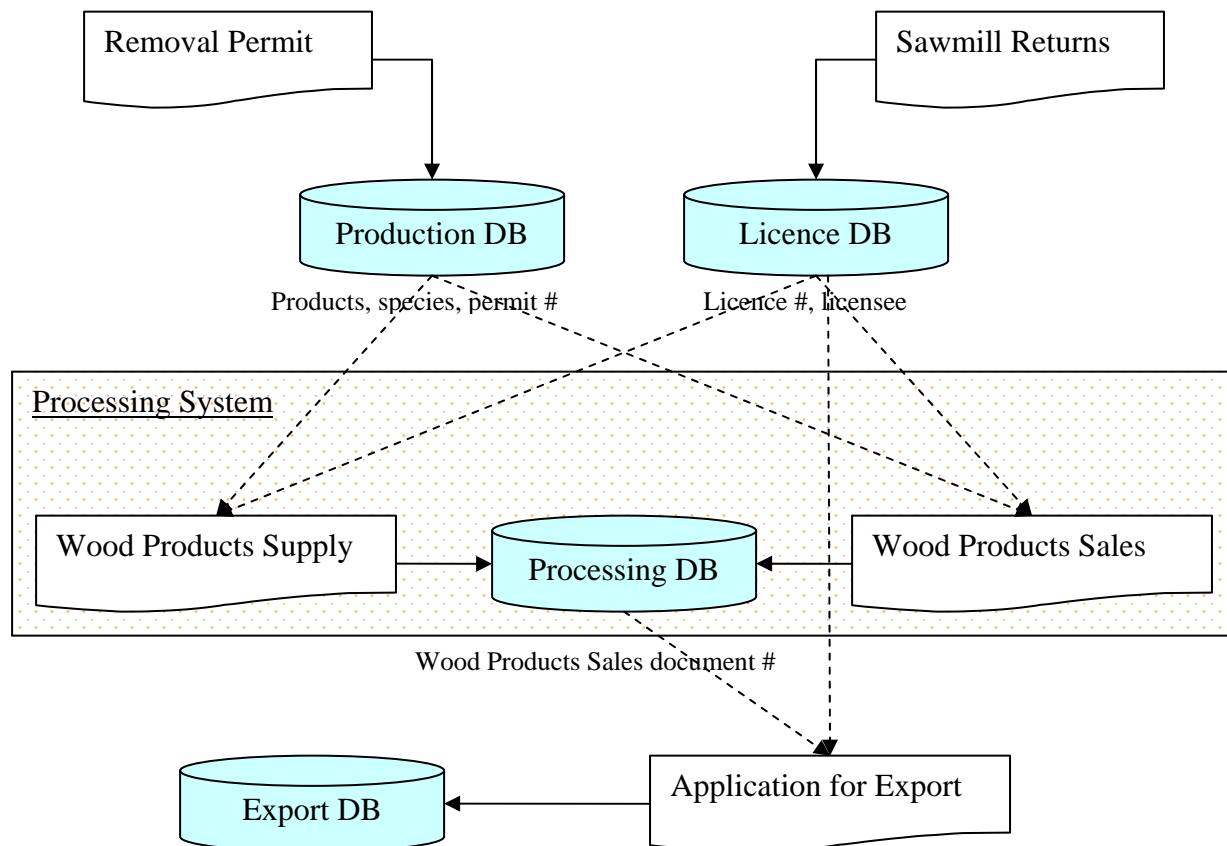


Figure 1: System Data Flow

Notes:

Removal Permit – the screen that allows users to enter details in the Production application must be modified to include information that will be gleaned from a supporting document – the Production Register.

Sawmill Returns – it is believed that this screen within the Licence application currently provides everything that is required, but this must be confirmed.

Wood Products Supply – this screen must be created to allow the entering of information detailing the buying of wood products by sawmillers and other forest product processors. The information must include names of products, species and permit numbers, which must come from the Production database, as well as licence numbers and licensee names, which must come from the Licence database.

Wood Products Sales – this screen must be created to allow the entering of information detailing the selling of wood products by sawmillers and other forest product processors. The information must include names of products, species and permit numbers, which must come from the Production database, as well as licence numbers and licensee names, which must come from the Licence database.

Application for Export – this information will be entered on a new screen within the Export database, and details the exporters request to export forest products out of Guyana. Document numbers from the Processing database and licence information from the Licence database will need to be used to create the application document.

Production Application Changes

Barcode Scanning

The log tags that GFC uses have bar codes that correspond to the actual numbers on each tag. It is intended that these bar codes be taken advantage of to allow easy, on-the-go retrieval of information about any tag. The idea is for this system to support the following kinds of barcode scanning:

1. Real-time Scanning
2. Offline Scanning

Real-time Scanning

This type of scanning shall take place only at one of GFC's main offices, which are part of GFC's Virtual Private Network (VPN) and can therefore access the main database housed at the Georgetown office.

- Users at any of GFC's main offices must be able to scan tag numbers into the production app to assign tag ranges. At this time it is believed that no further modification need be done to enable this – the user simply has to place the cursor in the appropriate textbox in the application, and then scan the tag in order for the tag number to appear in the textbox. Note that normal, manual entry of the numbers, which takes

place now, will still be possible if desired. When both limits have been entered, and the remaining information provided, the user will click the submit button to assign the tag range to the selected concession.

- Users must be able to use a portable barcode scanner to scan a tag at any of GFC's main offices, and obtain information about that tag. The intention is that the scanner will be communicating with a local server at the office which will be able to obtain the required information from the main database at Georgetown. Specifically, the information that shall be returned shall be:
 - Concession #
 - Concession name
 - The status of the tag – whether assigned, used or spoilt
 - The tag's expiry date
 - The block number range(s) associated with the tag.

Offline Scanning

Not all GFC offices are connected to the main office's VPN. Authorised forestry personnel at such offices should be able to go to a regional office, dock the scanner and download updates to the tag database into their scanner. Then, the officer should be able to scan tags and see information about that tag immediately, using a local database on the scanner device. The information returned shall be the same as for real-time scanning. The updates downloaded should not overwrite or delete existing information. Is it intended that these offline databases only contain information about tags that are supposed to be used in that area of the country, in order to minimise the amount of information that will need to pass along the VPN, as well the amount of storage that will be required on the scanners.

The proposed layout for the returned information, which should be displayed in both real-time and offline scanning scenarios is shown below.

Concession: Case Timbers Ltd. Concession Code; TSA BCE 001/1997) Tag#: 106228B Status: Used Expires: 2010-03-19 Block Range: AF2-AF6

Figure 2: Tag Information Layout

Tag and Block Ranges

Tag Assignment

Large concessions (those with more than 10,000 hectares), must follow GFC guidelines regarding sustainable forest harvesting, and as such, cannot harvest their entire allotted area at the same time. They must divide it into blocks, and at the beginning of their annual concession cycle they must declare which blocks they are planning to harvest for that year. GFC wishes to be able to use the Production Application to associate multiple, possibly non-contiguous block

ranges to a tag range at the time of assigning the tag range to the concession. The following also needs to be taken into consideration.

1. All concessionaires need to submit Production Registers, regardless of their size.
2. The association of block ranges to a tag range must be optional, as it is only necessary for large concessions.
3. A block range may be associated with multiple tag ranges.
4. Tag ranges associated with block ranges will not necessarily be the same as those associated with a concessionaire.

Tag Use – Production Register

Upon actually using the tags, concessionaires must fill out a Removal Permit which details, for each product and species of wood harvested, which tags were used on the logs (remembering that one tag is attached to one log). Therefore, all measurements on a detail are summaries of all the measurements of the logs represented by that line. In an effort to better monitor the harvesting, GFC wishes concessionaires to additionally fill out a Production Register, which will give details on each individual tree cut down. Each line of the Production Register will have more detailed measurements of a log, including which block or block range it belonged to. Now, it may seem that Production Registers and Removal Permits are related, and they are, but the relationship is not very strong. The logs detailed on a Removal Permit are those harvested during some arbitrary operation by the concessionaire. Production Registers must be submitted on a monthly basis. Therefore, if a concessionaire's harvesting operation spans two or more months, then the logs for that operation will appear on one Removal Permit, but several Production Registers.

GFC wishes that this Production Register be recorded in the Production Application. Similar to the permit screens, this will consist of a header and one or more details. As noted before, the relationship between the two documents is not strong enough for one to be created from the other, so the modification to the Production Application will be done in such a way that either one can be created first. The following screens show a proposal of how to manage the Production Registers in the system.

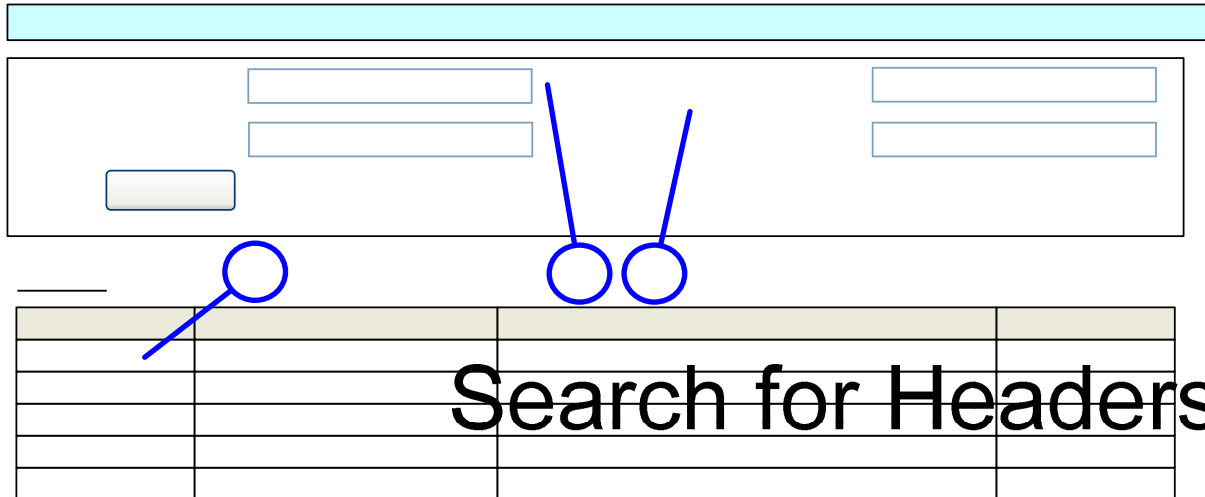
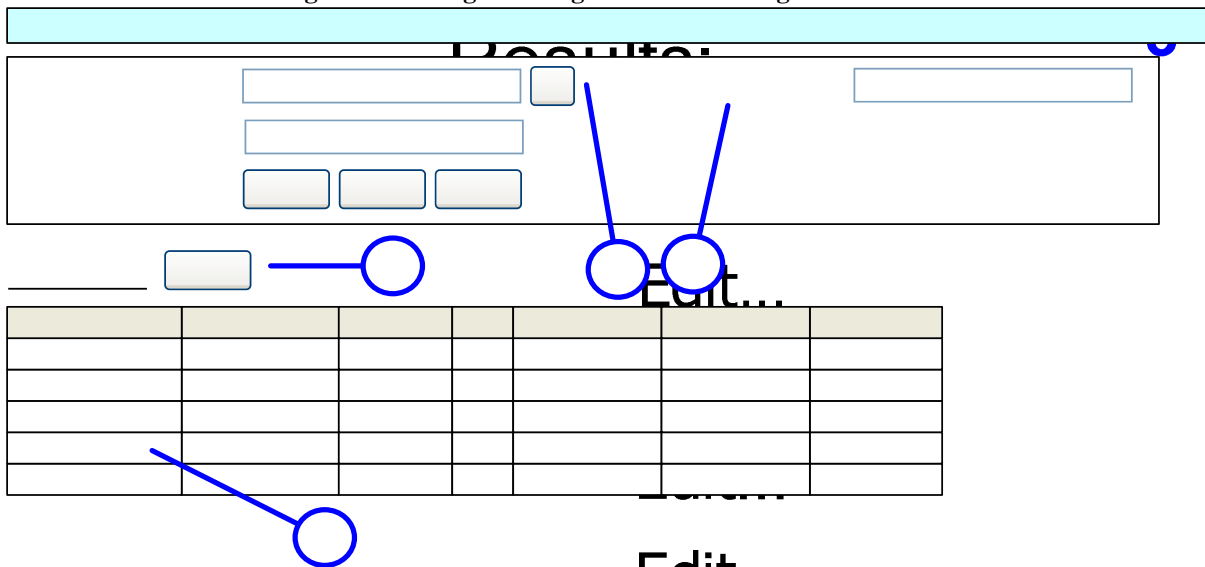


Figure 3: Searching for Production Register Headers

Notes:

1. The user may type in the beginning of the concession number in this box and the search will return matching register headers.
2. The user may type in a partial concession name in this box.
3. Clicking on the Edit link of any header will enable the user to edit the header.
4. The user will be able to use this paging control to scroll through what could be a long list of headers. This way the application will run faster and the user can quickly get to the desired record.

Figure 4: Editing/Creating a Production Register Header



Notes:

Edit...
Edit...

1. Similar to the Production Application, the user will be able to type the beginning of the concession number then click the List Of Values (LOV) button to see a list of matches from the database. After choosing the desired value, it will appear in the textbox.
2. After choosing the concession number, the corresponding concession name will be shown in this label
3. Clicking this button will enable a user to add a detail line to the current header
4. Clicking any Edit link will enable a user to edit the corresponding detail line of the current header.

Figure 5: Editing/Creating a Production Register Detail Line

Notes:

1. These labels will display the concession number and date the form was opened for the header for which the detail is being edited/created.
2. This LOV will assist the user in choosing only permits that belong to the selected concession.
3. This box will only become available after the user has chosen a permit number (this assumes the Removal Permit has already been entered) and will only allow the user to enter a tag number that has been used on that permit.
4. The Product and Species labels will display the respective corresponding values after the user has chosen a tag number.
5. This value will be calculated from the preceding diameters.
6. Only a UoM associated with the chosen product will be allowed.

Edit/Create Detail

Reports

This section details the changes or additions needed to the reports of the Production Application.

Header Information

Tag Usage Report

This existing report simply needs to be modified to include the following new parameters:

Concession No.:

1. Station – in cases where a tag was used, the station where the corresponding permit was surrendered.
2. County – the county in which the permit was surrendered

Permit Usage Report

This new report will have the following inputs;

1. Date Range
2. Permit Number
3. Concession Name or number
4. Station at which the permit was surrendered
5. County at which the permit was surrendered

The columns of the output report will be:

1. Concession number
2. Concession name
3. Permit Number
4. Date of issue of permit
5. Date of return of permit
6. Status of permit. The status can be one of four states, based on the date of issue and return. Note that a permit is 'used' if it has been returned to the GFC with used tags noted on it. Also, permits have a validity of 30 days from the date of issue:
 - a. Outstanding – not returned, or used, but still within the 30 day validity period
 - b. Returned and Used – returned within the validity period and used
 - c. Returned and Expired – used after the period of validity and returned to GFC
 - d. Returned, Unused and Expired – returned after the validity period and unused.
 - e. Returned, Unused and Valid – returned within the validity period and unused.
 - f. Expired - used after the period of validity and not returned to GFC

1. For the moment, this report will show two status indicators – Expired/Valid and Used/Not Used. There is currently no facility for inputting issued permits, only used ones. This means that the third status indicator – Returned/Not Returned - will have to be added when the issued facility is developed later.

Production and Tag Usage Report

This new report combines the Tag Usage and Production reports. The inputs are as follows:

Inputs:

1. Date range
2. Concession name/number
3. Permit number

Output Columns:

1. Permit Number
2. Tag Number
3. Number of pieces
4. Product
5. Species

6. Mean diameter
7. Length
8. Units
9. Quantity
10. Block No.

Licensing Application

There are no changes that need to be made to this application at this time. However, a new report is needed.

Reports

Sawmill Input/Output

This new report compares the inputs and outputs of sawmills.

Inputs:

1. Date range
2. Sawmill name
3. Licence number
4. County (of the licensee)
5. Species [select one or multiple]

Output Columns:

1. Date
2. Species
3. Input Quantity
4. Output Quantity
5. Recovery Rate (a percentage which is calculated as $\text{input/output} \times 100$)

Processing Application

This new application is intended to record information of interest to GFC concerning the processing operations that take place between the harvesting and exporting of forest products. It is therefore the link between the Production and Licensing Applications and the Export Application.

Wood Products Supply

Intermediate wood processing facilities, such as sawmills, must get their wood from somewhere, and they must report all such purchases monthly, using a form called the “Wood Products Supply”. The intention is to record as much as possible the movements of forest products, to enable better log tracking.

Search for Wood Product

Licence #:

Figure 6: Managing Wood Products Supply Reports

Notes:

1. The user will be helped in searching for a licence number, which really is coming from the Licence Application.
2. When the user has decided on the licence number, clicking on this button will cause the (read-only) Licence Info section to be populated with the relevant information. Any Wood Products Supply Reports associated with the licence will also be displayed in the Found Reports section.
3. Clicking the Edit link will allow the user to edit the corresponding report in the section below.
4. This is a standard form, with the exception that saving a new header will then allow the user to add in detail lines, using inline grid editing.
 - a. Either Permit no or invoice no must be entered.
 - b. If PermitNo is entered, only species on that permit and tags on that permit will be allowed
 - c. As usual, cascade the validation for species/product/uom.
 - d. Validate other party against other party type.
5. Clicking the Edit button will allow the user to edit the detail line right there in the grid.

Wood Products Sales

On a monthly basis, intermediate wood processing facilities must report their sales of wood products, using a Wood Products sales report. It is very similar to the Wood Products supply report, except that each detail line refers to the item sold, rather than an item bought. Also, each line indicates the purchaser of the product.

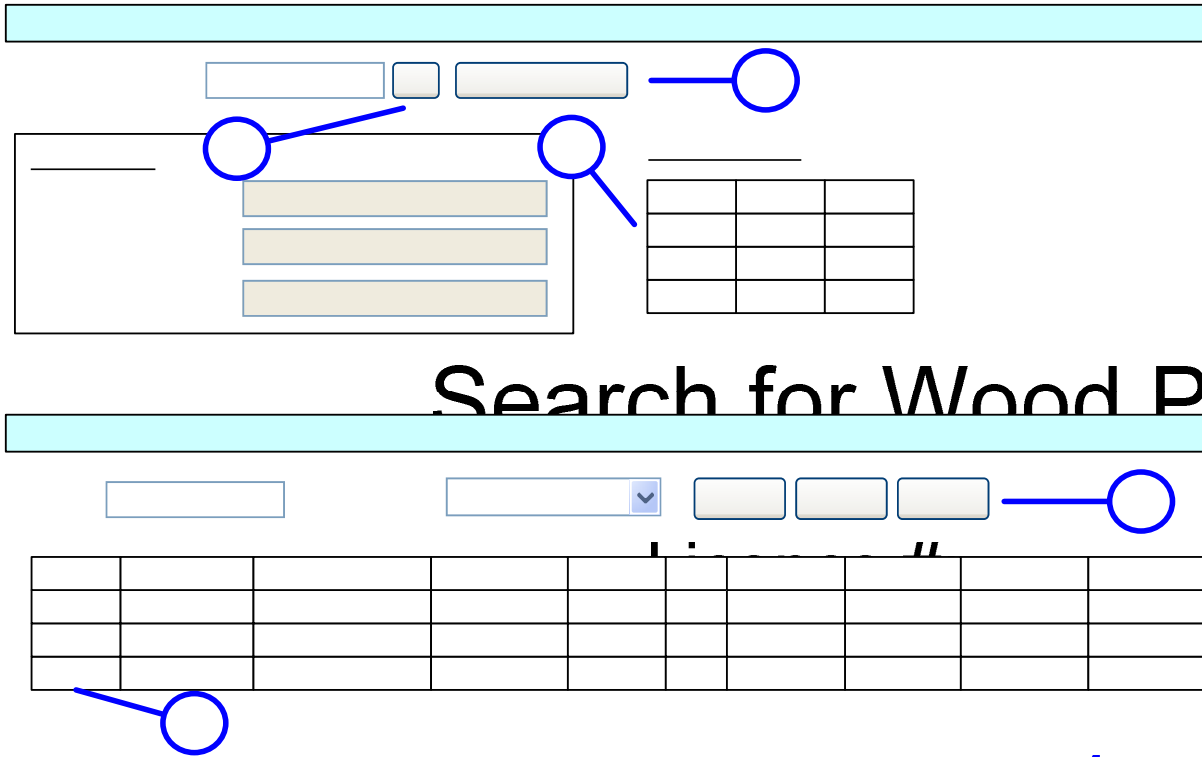


Figure 7: Managing Wood Products Sales Reports

Note: this interface has had to be changed in the interest of time. It is now implemented as two linked pages, managing headers and details separately.

Reports

Purchase Input Report

This report searches for individual lines on the Wood-Products Supply form.

Inputs:

1. *Date range
2. *Facility type (drop down list)
3. Partial facility name (assisted search box of all licensees and concessionaires)
4. Product (LOV)
5. Species (LOV)
6. Supplier
7. Invoice Number

Output Columns:

1. Date
2. Product
3. Species
4. UoM
5. Quantity
6. Supplier
7. Invoice Number
8. Tag Number

Facility Name:

Facility Address:

Facility Type:

Edit/Create Report

Year:

9. Permit Number

Group by Buyer, Supplier, Product then Species

Sales Input Report

This report searches for individual lines on the Wood Products Supply form.

Inputs:

8. Date range
9. Facility type (drop down list)
10. Partial facility name (assisted search box of all licensees and concessionaires)
11. Product (LOV)
12. Species (LOV)
13. Purchaser
14. Invoice Number

Output Columns:

10. Date
11. Product
12. Species
13. UoM
14. Quantity
15. Purchaser
16. Invoice Number
17. Tag Number
18. Permit Number

Group by Buyer, Supplier, Product then Species

Export Application Changes

The essential change for this application is to be able to track, as far as possible, the chain of custody of forest products. This is especially possible in the case of logs, which are tagged and should be able to be traced right back to the concessionaire that harvested them in the first place. Exporters have to fill out an Application for Export for Forest Produce, following the approval of which, they will eventually do a Commercial Invoice. Now, data entry of the Commercial Invoice is already being done in the Export Application. It is now required to create the necessary facilities to allow entry of the Export Application data.

Application for Export for Forest Produce



Figure 8: Searching for Forest Export Application

Notes:

1. The user will be assisted in finding the name of the desired exporter, and after clicking this button, the associated Applications will be displayed in the box below.
2. Clicking an Edit link will allow the user to edit the corresponding Application.

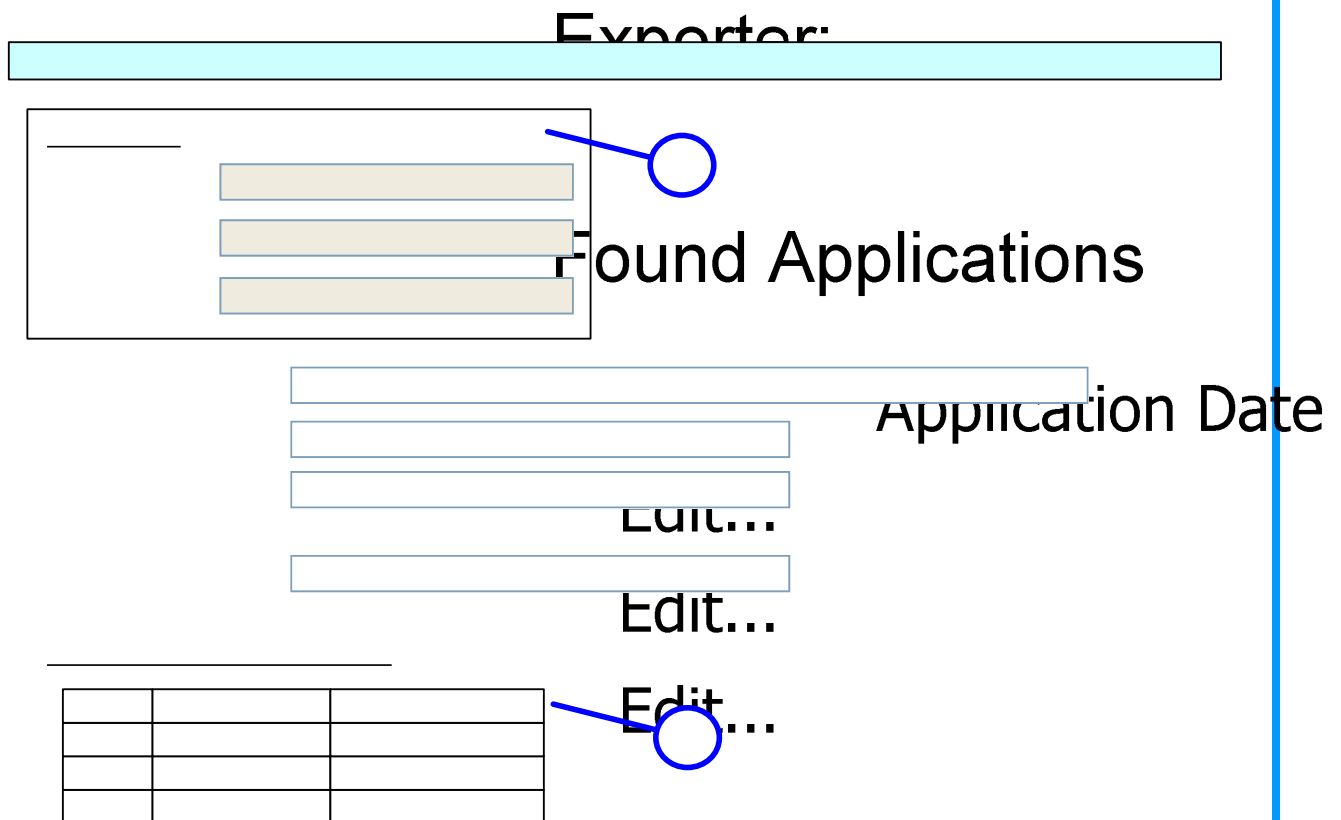


Figure 9: Edit/Create an Application for Export of Forest Produce

2

Edit: This interface has been changed so that the input of permit numbers is no longer free form, but individual and validated. Validation is attempted against the production database. If it fails the value is still accepted, but an indication of the validity is shown in the listing. Similarly, validation of suppliers' names and invoice numbers is attempted against the processing database, and an indication of the resulting validity shown in the listing.

Notes:

3. Some read-only details about the current Exporter will be displayed here so the user can have a context to work with.
4. The names of the exporter's suppliers, and their corresponding invoice or permit numbers will be completely managed from this grid. Therefore, an indication of the type of number will have to be chosen. Then, a test validation will be done on the number. If the validation fails, DO NOT hold back the transaction.

Modification to Commercial Invoice

The Commercial Invoice, which is currently being input, is a direct product of the Application for Export of Forest Produce. As such, each invoice needs to be linked to one and only one application. Thus, the current Export database structure needs to be modified to satisfy this requirement by adding an attribute to the Commercial Invoice that points back to its parent Application.

Reports

Application/Invoice Query

The purpose of this query is merely to be able to find and view the application associated with a particular invoice. Since there is already a search function for invoices, it is proposed that it be modified so that the results include links to view the corresponding applications for each invoice found.

Reconciliation Report

This report is meant to allow users to follow the chain of custody of forest produce as far as possible.

The screenshot shows a web form for generating a Reconciliation Report. It includes several input fields for data entry, a 'View Results' button, and a table with multiple columns. Blue circles and lines are overlaid on the form to highlight specific fields: one circle points to the 'Start Date' field, another to the 'Stop Date' field, a third to the 'Enter Exporter's Name' field, a fourth to the 'Supplier's Permit' field, and a fifth to the 'Supplier's Name' field. A sixth circle points to the table.

Figure 10: Reconciliation Report

Notes:

1. The user will be assisted in selecting the exporter.
2. The user can select a permit from suppliers of the selected exporter, or
3. They may select the name from a list of relevant suppliers
4. Selecting the supplier's name will restrict the list of invoice numbers from which the user must choose. After entering the required criteria, the user may click the "View Results" button to see the report. Note: either the permit number OR the supplier's name or invoice number MUST be entered, but only one.
5. This report initially will be a list of detail lines from the chosen exporter's Wood Products Supply reports that correspond to the selected supplier. In other words, the report will show all the items sold to the exporter by the first supplier.
 - a. Clicking on a supplier link will cause the report to be replaced by a similar one, with a slightly different meaning. This one will consist of detail lines from the Wood Products Supply reports of all those suppliers who supplied the chosen supplier with that species before the time of the supply transaction. Using this method of tracing the history of products, the Commission can get a fair idea of whether a transaction was legal or not.

- b. At any point the report can be printed.
- 6. After entering Supplier's name, the invoice number will not be mandatory.