

Timber Transport Forum Seminar, August 2002

Containerisation and the Movement of Roundwood in the British Forest Context

Seminar Report

1 Introduction

- 1.1 The concept of containerisation has been discussed for some time in Britain with regard to a forest application and there have been conflicting views on the subject. For some, containerisation could be a potential solution for some timber transport problems, while others dismiss the idea all together. Containers are used for timber transport in New Zealand and in some other locations in the world.¹
- 1.2 The Scottish Forest Industries Cluster in July 2001 helped to fund a demonstration project on containerisation. The project partners included Freightliner, Forest Enterprise and Borders Transport Futures. The results of the study included very useful technical information about containerisation but it was acknowledged that further research was required. The study has been published on the Scottish Forest Industries Cluster website.² At the same time a number of specialist container manufacturers have also highlighted their products as being suitable for forest use
- 1.3 In order to take matters forward the Timber Transport Forum and Forestry Civil Engineering arranged an industry seminar in Edinburgh on 19 August 2002 to evaluate the use of containers for the transportation of round timber. Delegates attended the seminar from Euroforest, UPM/Tillhill Harvesting, the United Kingdom Forest Products Association, Forest Enterprise, EWS Railways, Forestry and Timber Association, Timber Transport Forum, Forestry Contracting Association, Scottish Executive and Scottish Enterprise. The task for the seminar was to:
- Examine the concept of the containerisation of round timber;
 - List the key factors for success for the concept's application;
 - Determine if these parameters exist in UK forestry; and
 - Determine if more research leading to a demonstration project is required.

The Head of Forestry Civil Engineering, Mr David Killer, chaired the seminar and Carl Bro prepared background materials together with manufacturers' submissions and information prepared by the Timber Transport Forum Logistics Manager (Mr Tore Hognas).

¹ Rails 196, May 2002, New Zealand

² http://www.forestryscotland.com/timber_transport

2. Containerisation: A Brief History

- 2.1 The introduction of containers in British transport started in the 1960s. This was based on the use of steel framed boxes having a strong floor, panelled sides, end and roof and end door only. An International Standards Organisation (ISO) container can be stacked for storage on the hold of a ship. The typical ISO container is either 20' or 40' long by 8' wide and heights vary from 8'6" to 9'6". The first British application of containers was in 1965 when British Railways introduced the Freightliner Service.



- 2.2 Containerisation is now widely used and there are a large number of different kinds of containers for a wide variety of uses, from refrigerated units to the movement of pipes. Since the 1960s "rail involvement in container transport has moved from being almost entirely in the domestic overland market to being overwhelmingly linked to international deep sea shipping."³
- 2.3 There is only one remaining Freightliner terminal in Scotland – at Coatbridge. European road-rail swapbody traffic is channelled largely through the Mossend EuroCentral terminal operated by EWS.

3. Advantages and Disadvantages of Containerisation

- 3.1 Carl Bro has highlighted a number of advantages associated with containerisation:
- standardisation of equipment; and
 - avoidance of double-handling of the goods (with time, cost and security benefits)
- 3.2 There are, however, a number of drawbacks associated with containerisation. These are:

³ Round Timber and Containerisation - An Overview, Carl Bro 2002

- relatively heavy tare weight; and
- capital cost of intermodal transfer cranes (e.g. £500,000 minimum for mobile reachstacker, £1M minimum for rail-mounted gantry crane).

"The consequences of the above are that (a) containerisation is predominantly applied where a transfer between modes is unavoidable, e.g. at deep sea ports, and (b) inland intermodal railheads are located only where a heavy throughput of container traffic can be secured, typically serving only the largest conurbations."⁴

4. The Government's Transport Objectives

- 4.1 The Strategic Rail Authority has set a target for an 80% increase in rail freight over the next ten years.⁵ The Scottish Timber Transport Mapping Study which took forward one of the key themes of *Roots for Growth*, the Scottish Forest Industries Cluster strategy also recognised that there was potential for modal shift in the transport of timber from forest to mill.⁶
- 4.2 The recent Scottish Executive commissioned report, *Opportunities for Developing Sustainable Freight Facilities in Scotland* recommended that the potential for intermodal rail distribution of timber should be considered in more detail. An innovative solution in this area should be eligible for Freight Facility Grant (FFG) funding.

5. The Use of Containers Abroad: New Zealand

- 5.1 There is little international experience of using containers for the transportation of roundwood. This is a reflection of:
 - the relatively low value of the product in the context of international trade; and
 - the rural, low-density and shifting origins of the traffic, circumstances which are not conducive to supporting expensive road-rail transfer equipment or cost-effective road feeder services.
- 5.2 The timber industry in New Zealand has, however, experience of using containers. The New Zealand industry working with Tranz Rail (New Zealand's national rail carrier) is using the 'LogRac' container (a version of the standard flatrack) developed by Ahrenkiel. The possibility of the widespread conversion of timber flows to containers is currently under discussion. The driver for this has come from the potential benefits for deep sea export transits – eliminating multiple handling on bulk ships and offering more frequent and faster scheduled sailings. It should be noted that there are significant exports of New

⁴ Carl Bro, op cit, 2002

⁵ Freight Strategy, Strategic Rail Authority, May 2001

⁶ Scottish Timber Transport Mapping Study, June 2001

Zealand timber to neighbouring Asia/Pacific economies which differentiates the situation from that in the UK where most timber flows are domestic. In addition, the New Zealand Tranz Rail, is moving to the greater use of containers in order to avoid double-handling and intermediate shunting and to speed up rail transit times.⁷



6. Containerisation Demonstration Project: The Carron Valley Trials

- 6.1 A demonstration project on the use of containers for the movement of timber took place in July 2001 supported by the Scottish Forest Industries Cluster. The project sought to assess the technical feasibility (and associated operational benefits) of the intermodal (road-rail) movement of round timber from forest to customer using modified 20' and 40' long 'flatrack' containers. The project partners were Borders Transport Futures, BSW Timber, Containerlift, Ferguson Transport, Forest Enterprise, Scottish Enterprise and Freightliner (Scotland).
- 6.2 The trials took place in the Carron Valley Forest, at Coatbridge Freightliner Terminal, and at the BSW Carlisle sawmill, Carlisle. They were monitored and evaluated with particular regard to the practicalities of offloading containers to ground on forest roads, using the Containerlift road trailer-mounted container transfer system. The latter offers a lower-cost opportunity for intermodal applications in the forest environment compared to conventional capital-intensive container cranes.⁸
- 6.3 The photographs (overleaf) illustrate the key aspects of the project. Moving from left to right the key aspects are:

⁷ Rails, 196, May 2002

⁸ The results of the trials were published on the Scottish Forest Industries Cluster Web Site. They were assessed by the Spaven McCrossan Partnership, Glasgow (<http://www.forestryscotland.com>)

- Container is lowered onto the loading site;
- Timber is loaded into a container;
- Container is placed on the road vehicle;
- Container moved to rail;
- Containers on 60' container flat;
- Container offload at mill; and
- Timber discharge at mill.



6.4 The key findings of the trials were:

- Compared to use of conventional rail wagons, a saving of 25-35 minutes on a forest-railhead-forest cycle (excluding transit times) appears achievable through containerisation. This would eliminate two out of three timber loading stages (the load from forest roadside pile to conventional road trailer, and the load from trailer to rail wagon). This road vehicle utilisation advantage (to some extent counteracted by a payload disadvantage, reflecting the heavier tare weight of containers) would be most marked on short forest-railhead hauls where the transfer / loading stages constitute a large proportion of the total transit plus transfer / loading cycle.

- Containerisation would also reduce the multi-handling of pieces of timber, with potential product quality benefits. Other key benefits from use of containers could include increased flexibility for backloading, and the ability to retain the integrity of each container load in storage areas at destination mills.
- The day-to-day use of containers would, however, require a re-gearing of forest operations to provide for container loading by forwarder units (with load weighing devices). There could also be implications for maintenance of forest roads. There would also be a requirement for provision of a network of special forest road lay-bys or a system of moveable grounding platforms for the containers.
- The trial concluded that it would require a full commercial evaluation of the impact of containerisation on the entire supply chain from forest to customer before final conclusions could be reached on potential applications for specific geographical flows.
- The possible benefits of containerisation are most likely to be realised in harvesting areas where there is scope for railheads deep within the forest area, capable of being fed by a network of forest haul roads – parts of the West Highlands, Galloway and the southern Borders being potential examples. This benefit could of course be secured through upgrading and extension of conventional rail services.⁹

7. British Forestry Markets and Operations

7.1 Although containerisation can be used for the transport of a large number of different goods, including roundwood, current British forest conditions tend to mitigate against its use. Most of the problems are linked to the design, layout and current operation of the harvesting sites:

- There are few bulk timber flows from one harvesting site to one production site;
- There are restrictions on where to unload the forwarder and there is not generous space for loading and turning vehicles; and
- A harvesting site has to cope with up to 10 different timber cuts for different markets. These need to be kept apart as they have different delivery schedules. Managing containers in such circumstances can be extremely difficult.

Bearing these restrictions in mind the introduction of containers would probably reduce the productivity of extraction and increase the damage on the forest roads, terrain and stand. In addition, the introduction of would increase the load on already vulnerable forest roads.

⁹ Intermodal Rail Timber Demonstration Project, 2001

- 7.2 Looking at the receiving end of the process – the mill – there are a number of issues which would involve the re-gearing of mill operations. These would include the revision of current weighbridge procedures and container storage arrangements. If, however, timber was for export and being transferred to a ship as in New Zealand then containerisation would offer advantages as detailed above.
- 7.3 The industry seminar did not support the use of containers for the transport of round timber in UK but did recognise that the concept could be applicable in different circumstances.
- Firstly, the industry evaluation is based on typical current British conditions. In an ideal world containerisation would be applicable from sites with a few assortments and large streams to one destination. This would also require the internal forest roads to be re-engineered to handle containers and mill receiving procedures would also have to be altered. If conditions were right the implementation of a containerisation solution should be relatively straightforward since there is equipment on the market suitable for movement of round timber. No further trials of containers were proposed.
 - Secondly, only domestic mill supply with home-grown timber was evaluated. Import or export of high-value timber including long distances and several interchanges is probably the core area for use of containers in transport of round timber. It is considered that further work is required to explore this application within the UK context.
 - Thirdly, the industry evaluation was restricted to round timber. An examination of the applicability of containerisation to transport of bi-products such as chips, sawdust and bark and for finished products should be undertaken. It is considered that this should be examined in the context of ongoing work looking at maximising the number of rail connected mills in north Britain.
 - Fourthly, the industry evaluation focused only on existing methods and equipment for transport of round timber in containers. There are a number of interesting related ideas from Scandinavia. These include bundling of timber and the use of a road friendly prehaulage vehicle for gathering timber in light containers or skips. It is considered that these related concepts should be explored further.

8. Conclusion and Recommendation

- 8.1 The industry seminar concluded that the general application of containerisation to the harvesting of round timber was not suitable to current British forest and mill operations.

- 8.2 There are, however, specific flows where containerisation could work such as dedicated bulk flows between one harvesting area and a mill but these would require a regearing of both forest and mill operations. Timber export markets could also lend themselves to the idea of containerisation following the New Zealand model. Further investigation of these specific flows and the use of containers for the export should be pursued by the Timber Transport Forum Logistics Manager.
- 8.3 Containers may have use in higher value added forest products or in the movement of co-products. Further work should be undertaken in this area in the context of maximising the number of mills in northern Britain which are rail connected.

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2nd October 2002

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