U.S. Department
of Transportation
Federal Railroad Administration
Office of Policy

Double Stack Container Systems: Implications for U.S. Railroads and Ports

U.S. Department
of Transportation
Maritime Administration
Office of Port and
Intermodal Development

Bibliography

FRA-RRP-90-3
MA-PORT-830-90010

June 1990

Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
FRA-RRP-90-3 MA-PORT-830-90010		

4. Title and Subtitle	5. Report Date
Double Stack Container Systems: Implications for U.S. Railroads and Ports	June 1990
	6. Performing Organization Code
7. Author(s)	8. Performing Organization Report No.
Daniel S. Smith, principal author	
9. Performing Organization Name and Address	10. Work Unit No. (TRAIS)
Manalytics, Inc. 625 Third Street San Francisco, California 94107	11. Contract or Grant No. DTFR53-88-C-00020
	13. Type of Report and Period Covered
12. Sponsoring Agency Name and Address Federal Railroad Administration Maritime Administration U.S. Department of Transportation Washington, D.C. 20590	Bibliography
	14. Sponsoring Agency Code

15. Supplementary Notes

Project Monitor(s): Marilyn Klein, Federal Railroad Admin.
Andrew Reed, Maritime Administration
400 7th St., SW - Washington, D.C. 20590

16. Abstract

This study assesses the potential for domestic double-stack container transportation and the implications of expanded double-stack systems for railroads, ports, and ocean carriers. The study suggests that double-stack service can be fully competitive with trucks in dense traffic corridors of 725 miles or more. There are opportunities to substantially increase double-stack service in existing corridors and to introduce double-stack service in secondary corridors, in outlying areas near major hubs, and for refrigerated commodities. To meet the challenge of providing and marketing a reliable, high quality, door-to-door service, railroads may have to take unaccustomed steps into marketing and customer service, or become strictly line-haul carriers. Ports must accommodate international double-stack growth, but they will be only indirectly affected by domestic containerization. Intermodal affiliates of ocean carriers will retain their leadership role in domestic containerization, while the ocean carriers themselves concentrate on international movements and markets.

The products available from this contract include the Executive Summary, the Final Report, and the Bibliography.

17. Key Words	18. Distribution Statement
double stack container systems; railroads; ports; ocean carriers; intermodal, domestic containers	: Document is available to the public through the National Technical Information Service, Springfield, Virginia 22161

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
unclassified	unclassified	45	

Form DOT F 1700.7 (8-72) Reproduction of completed page authorized

Introduction

This bibliography was compiled under contract to the Federal Railroad Administration and the Maritime Administration as part of a major study entitled "Double-Stack Container Systems: Implications For U.S. Railroads And Ports."

The dynamic nature of the subject matter prevents any attempt to compile a complete listing of every article or publication on double-stack trains, intermodalism, or domestic containerization. This bibliography concentrates instead on locating and annotating major studies, research reports, and useful overviews.

The citations are organized by general topic areas. Because of the nature of intermodal transportation itself, many publications tend to cross any arbitrary boundaries. It is therefore advisable to consult citations under related categories as well as under the main topic of interest.

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INDUSTRY OVERVIEWS

1. "Activities in the Liner Industry and their Import on Double Stack Trains." Dr. Henry Marcus. For the ASSOCIATION OF THE AMERICAN RAILROADS, October, 1987. (Proprietary Study)

2. "Canadian Rails Handle Deregulation with Care." Francis Phillips. CONTAINERIZATION INTERNATIONAL, v. 22, no. 5, May 1988, pp. 67-71.

   Explains Canadian railroads' hesitation in the intermodal industry, and how deregulation has affected the Canadian railroads. Table included summarizes rail and intermodal revenues and facilities.

3. "The Case for On-Terminal Operations." Asaf Ashar. WORLD WIDE SHIPPING/WORLD PORTS, v. 47, no. 1, February/March 1984, pp. 78-79.

   Compares U.S. and European responses to the needs of intermodalism (in 1984). Makes suggestions for future on-terminal intermodal connections.

4. "Confidence Continues." PORT DEVELOPMENT INTERNATIONAL, v. 3, no. 12, December 1987, p. 21.

   Despite grim projections for the U.S. economy in late 1988, the intermodal industry pursues new developments.

5. "Containerization and the Transportation of Agricultural Commodities." B. J. Pratt. PROCEEDINGS OF THE TRANSPORTATION RESEARCH FORUM, v 24, no. 2, 1983, pp. 492-494.

   Documents the history and present technology of containers for agricultural commodities. Sea-Land appears to be the leader in experimentation in this area, and a number of its findings are reported.

6. "The Current Surface Transport Inter-Relationships Affecting Intermodal Growth." Jeffrey Hudson and Forrest Baker. PROCEEDINGS OF THE TRANSPORTATION RESEARCH FORUM, v. 26, no. 1, 1985, pp. 242-248.

   This study analyzes the economic and institutional attraction of boxcars, intermodal motor carriers, and new maritime container technology. Interviews reveal that maritime container technology would have the greatest potential impact upon the future of intermodal surface transport.

7. "Decision Time Down the Track." PORT DEVELOPMENT INT'L., v. 4, no. 4, April 1988, pp. 18-21.

   The ways in which the U.S. railroad industry is reacting to the challenges of intermodalism are discussed. Various factors have improved service efficiency and led to cost savings, but they have also changed the industry. Double stack trains and domestic containerization issues have also added to the complexity of the situation. [From U.S. MARAD's MARIBASE]

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8. "Domestic Container Options." Richard Knee. AMERICAN SHIPPER, v. 28, no. 6, June 1986, pp. 56-60.

A summary of speeches given at the 1986 Intermodal Transportation Association's conference in Seattle. Cooperation among operators was the main theme. Equipment options and operators' adaptions were also discussed.

9. "Domestic Containerization" TRANSPORTATION RESEARCH FORUM PROCEEDINGS SUPPLEMENT, 1986 ANNUAL MEETING, Seattle, Washington, September, 1986, pp. 37-40.

Summary of paper presentations and speeches by Daniel Smith, Manalytics, Inc.; David J. DeBoer, Greenbrier Intermodal; and Peter Metria, American President Intermodal. Topics covered include the potential for domestic containerization and the history and expansion of double-stack service.

10. "Domestic Containerization: How Big Can It Get?" Daniel Smith. PROCEEDINGS OF THE TRANSPORTATION RESEARCH FORUM, v. 27, no. 1, 1986, pp. 289-295.

Analyzes the potential for domestic containerization by defining the market in terms of demand, supply, and competition. Concludes that the current supply of containers could adequately serve the demand in the near future, but that the potential demand is large. The market will be highly competitive, and leads railroads to compete in the price-sensitive, rather than service-sensitive markets.

11. DOMESTIC CONTAINERIZATION: A PRELIMINARY FEASIBILITY STUDY. Boston: Temple, Barker & Sloane, Inc. for The Association of American Railroads, February 1986, 200 p.

An overview of the issues involved in domestic containerization: technical, economic, and institutional. Draws the conclusion that domestic containerization offers potential cost savings over other intermodal systems, and that domestic containers can be successfully integrated into existing systems. The report delineates obstacles which may stand in the way, and also includes a large section on suggestions for a detailed study. Tables and charts depict cost summaries and market trends, and pictures illustrate the equipment.

12. "Domestic Containerization: Crossing the Verge." Elliot Schrier. PACIFIC SHIPPER, v. 60, no. 21, July 15, 1985, pp. 36-41.

Anticipates the growth of domestic containerization beyond the shipping line network. Views specific service contracts as integral for expanding the infrastructure. Explains some of the barriers to growth in 1985.

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13. "Domestic Containerization: Overview of Terminal Design and Operating Issues. James Down and Dean Wise. Washington, D.C.: TRANSPORTATION RESEARCH BOARD STATE OF THE ART REPORT 4, 1986, pp. 116-122.

    One of the key challenges in pursuing domestic containerization is the ability of the current system of trailer-based intermodal terminals to adapt to container-based systems. This paper provides an overview of terminal design and operating issues that trailer-on-flatcar (TOFC) terminal managers and designers will face with a transition to domestic containerization. The issues covered include management and control of chassis, terminal mechanization requirements, alternative highway and rail transfer methods, labor requirements, and requirements for container and chassis staging and parking. [From the introduction.]

14. "Domestic Containerization Spurred By Latest Intermodal Port Designs." David Field. TRAFFIC WORLD, v. 205, no. 11, March 17, 1986, pp. 79-81.

    A Transportation Research Board Conference report describes terminal container equipment. Analysts suggest solutions for various equipment problems: chassis storage, mechanization investment, vehicle identification, etc.

15. "Domestic Containerization v. International Trade." Stewart Wade. FAIRPLAY, v. 298, no. 5362, July 3, 1986, pp. 21-25.

    Suggets that international shipping may sometimes be at odds with domestic containerization due to cargo configurations and space requirements. One official stresses that education and incentives are lacking in packing requirements on the different sized containers.

16. "Don't Stop the Box." Mark North. CARGO SYSTEMS INTERNATIONAL, v. 15, no. 7, July 1988, p. 67.

    Summarizes speeches made at a 1988 Worldwide Shipping Conference with the main thrust being that port authorities need to cooperate within the "transportation chain." Stress was placed on long-term management approaches which would include soliciting government support for port facility expansion.

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17. "Effects of Ocean Carrier Double-Stack Container Train Services on Domestic Freight Services: An Overview." Staff Study. Cambridge, MA: U.S. D.O.T. Transportation Systems Center, June 1986.

    This study examines current intermodal developments in the United States, with particular emphasis on ocean carrier double-stack container train services. It evaluates the effects of new container freight services on existing conventional rail/truck intermodal services. An overview of traffic patterns, the competitive relationships between marine and inland carriers and the impacts of the emerging competition on shippers are provided. Recently published studies by others are used to provide a preliminary assessment of the economics of various intermodal train technologies and services. Cost estimates developed by the Association of American Railroads are used to develop cost indices for these economic comparisons. [From the executive summary.]

18. ENERGY STUDY OF INTERMODAL FREIGHT. Robert G. Cuilly. Menlo Park, CA: SRI International for the Dept. of Energy, January 26, 1982, 32 p.

    Examines the impediments to the use of TOFC (facilities, equipment, capital cost, motivational factors); identifies federal agency programs having an effect or possible effect; recommends actions for public or private agencies to encourage intermodal movement.

19. "The Final Gap." Robert Hardwicke. AMERICAN SHIPPER, v. 27, no. 11, November 1985. pp. 66-78.

    In-depth assessment of the current logistics which support ship and train container transfers. Specific facilities and managers' philosophies are described.

20. "Freedom to Manage." PORT DEVELOPMENT INTERNATIONAL, v. 3, no. 12, December 1987, pp. 26-27.

    Ramifications of Canada's National Transportation Act, which include the potential for U.S. railroads to "invade." The Canadian lines recognize that improvements in their intermodal facilities are needed, as well as a cooperative effort with the U.S.

21. "Freight Terminals and the Need for a Common Communications Code." Freddie Jefferson. Washington, D.C.: TRANSPORTATION RESEARCH BOARD STATE OF THE ART REPORT 4, 1986, pp. 130-133.

    The rapid growth of container transportation has brought attendant problems, not the least of which is the handling, processing, and exchange of data that efficient control requires. The proposal outlined in this paper attempts to solve this problem by providing a standard communications code for use between operators, leaving each individual operator free to use the internal operating code of its choice.

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22. "From Coast to Coast: The Battle for Domestic Cargo." CONTAINER NEWS, v. 23, no. 9, September 1988, pp. 22-25.

    Different types of cargo suitable for domestic containers are described, as well as statistics for platforms in use and intermodal fleet platform-miles. Indicates K-Line's intention to double its stack car fleet, and includes a few representative opinions on domestic containerization trends.

23. "The Greatest Potential." Carl Weiselmann. MODERN RAILROADS, v. 41, no. 7, July 1986, pp. 27-30.

    Summarizes the findings of the 1986 Temple, Parker & Sloane study on domestic containerization. The study concluded that domestic containerization is bound to replace the current trailer-based system, and that double-stacks are the most cost-effective of the new technologies.

24. "How Can Microbridge Survive?" Roger Schreffler. AMERICAN SHIPPER, (in four parts), v. 24, no. 5, May 1982, pp. 38-46.

    First in a four-part series, this article attempts to define "microbridge" and its future. Predicts that the railroads will handle the bulk of the business and delves into some of the economic problems in organizing services. Educating the shipping public about microbridge issues is stressed.

25. "How to Buy Intermodal Services." Michael Oskroba. INBOUND LOGISTICS, v. 8, no. 2, February 1988.

    Stresses the importance and objectives of research to assess company needs, and to find the correct intermodal carrier. Contains a list of pertinent questions for prospective carriers, as well as listing two sources for obtaining intermodal information.

26. "Impact of Transportation Policy on Intermodal Competition." Michael Babcock and H. Wade German." PROCEEDINGS OF THE TRANSPORTATION RESEARCH FORUM, v. 27, no. 1, 1986, pp. 281-288.

    An analysis of government policy on water and truck-rail competition. Using a time series regression model, concludes that the Motor Carrier Act of 1980 and the Surface Transportation Assistance Act of 1982 will continue to have a depressing effect on the rail market, but the highway policy is beneficial to motor carriers, and water carrier competition has improved as well.

27. "The Intermodal Challenge." James W. Down and Dean H. Wise. TRAFFIC WORLD, v. 205, no. 11, March 17, 1986.

    Two Temple, Barker & Sloane associates describe growth projections based on past statistics. Continuing profitability problems are defined and the contribution of new technology is discussed.

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28. "Intermodal - New Concepts in Technology." A. Wurm. PROCEEDINGS OF CONTAINER EFFICIENCY AND SHIPPING CONFERENCE, Dec. 2-4, 1985, Amsterdam, pp. 155-161.

    This paper presents a survey on the current status of some selected R&D projects in the field of intermodal transport, under way in the Federal Republic of Germany or which have recently been finalized.

29. "The Intermodal Revolution." In AMERICA'S RAILROADS - A BLUEPRINT FOR CHANGE! Gus Welty, editor. Omaha, Nebraska: Simmons-Boardman books, 1985, pp. 45-54.

    Quickly describes Santa Fe's, Chessie System's and BN's involvement in intermodalism at the time of this article (1985).

30. "Intermodal Traffic in the U.S. - The Far Reaching Effects of Deregulation." D.J. Kerrigan. PROCEEDINGS OF RO-RO, 1986, May 13-15, 1986, Goteborg, Sweden, pp. 27-35.

    The author, president of Atlantic Container Line USA, discusses the positive aspects of utilizing Ro/Ro ships for the North American Trade and comments on the status of intermodal transportation in the context of deregulation of the U.S. railroad system. [From U.S. MARAD's MARIBASE]

31. "Intermodalism: An Eclectic Bill of Fare." Thomas L. Tanel. INBOUND LOGISTICS, v. 8, no. 2, February 1988, pp. 18-21.

    An overview of intermodalism which credits deregulation for its upsurge. Briefly describes different movements, third parties, terminals and equipment, as well as reasons for its appeal.

32. "Intermodalism: Setting New Criteria for U.S. Container Terminal Design and Operation." John Vickerman, PROCEEDINGS OF PANC, 1988, May 11-13, 1988. Baltimore, Maryland. p. 13.

    In an age of intermodalism, the conventional planning methods and criteria previously used to design container terminals and intermodal facilities in the United States will no longer be adequate. There will be a requirement for continual technological and operational advances. These will include increased vessel and crane capabilities, coupled with demands for the just-in-time arrival of containers at rail transfer facilities and for the distribution of containers by high-speed double-stack rail service. [From U.S. MARAD's MARIBASE]

33. "Making a Case for the Standard Domestic Box." PACIFIC SHIPPER, v. 61, June 2, 1986.

    Vincent Grey, equipment consultant, gives his reasons for the standardization of domestic boxes. ANSI is leaning toward a 48-foot standard, and their specifications and justifications are included.

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34. "Making Intermodalism Pay." Mark North. CARGO SYSTEMS INT'L, v. 15, no. 6, June 1988, pp. 46-47.

    Excerpts from speeches made at the 1988 International Intermodal Expo which emphasized a "single system" of intermodalism. Shipping containers are viewed as the key to intermodalism due to their flexibility and international appeal, but their use has been stunted due to railroads' unfamiliarity with them and the size restriction question.

35. "Maritime-Rail Interface." (Address) James O'Brien. Washington, DC: TRANSPORTATION RESEARCH BOARD STATE OF THE ART REPORT 4, 1986, pp. 96-98.

    Gives a brief history of maritime-rail interface and brings up logistics questions for current and future developments. Double-stack technology is described as an integral part of this interface, and needs to be addressed as such.

36. "Microbridge: A Marginal Operation for Many." Roger Schreffler. AMERICAN SHIPPER, v. 24, no. 6, June 1982, pp. 6-12.

    Documents a few companies who were not pleased with the intermodal service they were getting in 1982, as well as a few for whom the service works well.

37. "Microbridge: The Three Approaches." AMERICAN SHIPPER, v. 24, no. 7, July 1982. pp. 22-30.

    Documents the intermodal development of the larger service shippers, some of the smaller lines, and the NVOs which negotiate service packages for clients, utilizing all modes. Domestic coordination is emphasized as the key for the future.

38. "Microbridge (IPI): The European Experience." AMERICAN SHIPPER, v. 24, no. 7, August 1982, pp. 28-30.

    Explains Europe's system of shipper responsibility and control of intermodal transport. Success is attributed to the European geographical layout, and is not easily comparable to U.S. mini-bridge.

39. "Multimodal Transport from A Canadian Perspective." Joseph Diamond. PROCEEDINGS OF THE TRANSPORTATION RESEARCH FORUM, v. 27, no. 1, 1986, pp. 274-279.

    Briefly documents multimodal growth in Canada, discussing regulatory and logistics issues. Charts illustrate costs, revenues and capacities of various modes.

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40. "No Stopping in the Intermodal Track." PORT DEVELOPMENT INTERNATIONAL, v. 3, no. 12, December 1987, p. 19.

    Short overview of the newest intermodal developments in North America. Mention of information transmission as an area needing significant improvement.

41. "On-Dock Transfer: Facing the Issues." Daniel Smith. PROCEEDINGS OF THE TRANSPORTATION RESEARCH FORUM. v 27, no. 1, 1986, pp. 354-359.

    Defines on-dock transfer and the issues surrounding it. Describes specific terminals and equipment used. Emphasis is organizational/institutional innovation as opposed to technological.

42. "Planning, Leasing and Intermodal Facility Development: Perspective of the Engineering Department of Sea-Land Corporation." E.L. DeMinna, Washington, D.C.: TRANSPORTATION RESEARCH BOARD STATE OF THE ART REPORT 4, 1986, pp. 83-86.

    The key to the future, for the third generation of the shipping industry, lies in effective planning. The traditional view of planning as synonymous with engineering design and with a window of up to 5 years into the future must be abandoned. Instead, planning must be seen as a process, a series of activities that occur in a logical order or sequence. The complex interactive nature of all of the elements that are involved in a marine or intermodal terminal operation must be considered in developing plans. [From the introduction].

43. "The Potential Effects of Improved Railroad Intermodal Technology Within a Competitive Environment." John Williams and Judith Roberts. PROCEEDINGS OF THE TRANSPORTATION RESEARCH FORUM, v. 26, no. 1, 1985, pp. 242-248.

    After using a rail cost model to evaluate intermodal technology, the study suggests that the double-stack and "truck equivalent" container trains are "substantial improvements in operational efficiency."

44. "Pro and Con: Domestic Containerization." Richard Knee. AMERICAN SHIPPER, v. 26, no. 12, December 1984, pp. 18-22

    A report on the 1984 Intermodal Transportation Association conference. Summarizes speeches by leaders in the industry.

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45. "Rail Versus Truck: Are Rail Intermodal Services a Serious Threat to the High Service Truckers?" Alex, Brown & Sons, Inc. RESEARCH TRANSPORTATION GROUP, INDUSTRY COMMENT. July 1987, 14 p.

    Concludes that rail intermodal service does not threaten the high-service truckload sector because it taps only a small market; service requires high density, long-haul freight corridors; its costs are higher; its services are not as timely, reliable or flexible; and its equipment availability and quality are lower. Contains cost/service graphs and charts.

46. "Railroad Intermodal Capacity Gets a Lift from Domestic Boxes." James Abbott. TRAFFIC WORLD, v. 215, no. 10, September, 1988.

    An overview of recent trends in domestic containers and projections for the future of the service. The possibility that domestics could cut into international backhauls is discussed.

47. "Report Questions Handling Values." Vincent Champion. CARGO SYSTEMS INTERNATIONAL, v. 14, no. 9, September 1987, p. 53.

    A report from the United Nation's Economic Commission for Latin America and the Caribbean is reviewed. The document, entitled "Structural Changes in Ocean-Liner Transport," deals with factors bearing on liner trades and on the development of integrated intermodal systems. It also challenges prevailing opinion on the most cost efficient way to handle containerships and predicts that U.S. double-stack traffic could double by 1989. [From U.S. MARAD's MARIBASE]

48. "The Role of Ports in Double-Stack Train Service." John Leeper. Alexandria, VA. Phillips Cartner & Co., Inc., January 1986, p. 8.

    Identifies the long-range impact that double-stack service will have on ports and intermodal service. Concludes that those ports that adapt the quickest to double-stacks will gain the most advantages. Also, double-stacks will lower general transportation costs and stimulate the movement of price-elastic goods and commodities. Included is a chart on "current" (1985) one-way double-stack train service.

49. "Rough Ride for U.S. Railroads?" PORT DEVELOPMENT INTERNATIONAL. v. 4, no. 4, April 1988, pp. 15-18.

    Despite prevalent assurances about the general health of intermodalism, the economic performance and profits of the U.S. railroad industry are being seriously undermined by legislation, labor relations and competition from truckers. The difficulties in which the industry finds itself are reviewed. [From U.S. MARAD's MARIBASE]

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50. "Stack Train Intermodalism: Who Is Running The Show?" Elizabeth Canna. AMERICAN SHIPPER, v. 29, no. 12, December 1987, p. 40.

    Article quotes a major shipper's agent to the effect that although railroads now control stack-train operations, shippers and ocean carriers are becoming more active in managing and marketing double-stack services.

51. "Trailer Train Analysis of Stack Car Demand." Ben Carley. AMERICAN SHIPPER, v. 29, no. 9, September 1987, pp. 36-38.

    Double-stack traffic from the West Coast to Chicago has been booming since 1985, but a study by Chicago's Trailer Train suggests that this trend should slow and that traffic might perhaps even decrease in the face of pending protectionist measures in Congress. Auto parts traffic from the Far East is expected to double by 1991. [From U.S. MARAD's MARIBASE]

52. "Train Feeders." Suzanne Martinucci. WORLD WIDE SHIPPING, v. 50, no. 5, July/August 1987, pp. 26-27.

    Referring to the increased ties between steamship lines and railroads, port officials give projections for future facility needs.

53. "U.S. Domestic Boxes - Ready for Take Off." Chris Munford. CARGO SYSTEMS, v. 15, no. 4, April 1988, pp. 35-37.

    Discusses the technical challenges being posed to the container industry, including container weight, height, and capacity design considerations. Also cites the firms engaged in producing domestic containers.

54. "U.S. Intermodal Developments: Double-Stack Rail Car Services." David L. Anderson. PROCEEDINGS OF CONTAINER EFFICIENCY AND SHIPPING CONFERENCE, Dec. 2-4, 1985, Amsterdam, pp. 99-109.

    The new double-stack railcar intermodal services are being touted as a long-term solution to the cost and service time problems often faced by international shippers moving products into and out of U.S. markets. The objective of this paper is to examine current intermodal developments in the United States, with particular emphasis on the impact of new container freight technologies on international logistics systems over the next few years. [From U.S. MARAD's MARIBASE]

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55. "U.S.A.: Rushing to Be Second." D.C. Cole. PROCEEDINGS OF CONTAINER TECHNOLOGY CONFERENCE, 6th, December 305, 1986, Amsterdam, pp. 37-41.

This paper traces the evolution of intermodal transportation in the United States and points up a number of issues facing the railroads in relation to this concept. Topics covered include: development of American President Lines double-stack car system; confusion among railroads on whether to adopt domestic containerization; limitations in the potential of the double-stack concept; criteria for the "ideal" domestic container; experimentation with carless technology; uncertainty over the type of equipment for intermodal operations; and the future of intermodal traffic. [From U.S. MARAD's MARIBASE]

56. "Waiting for the Off . . ." Francis Phillips, CONTAINERIZATION INTERNATIONAL, v. 21, no. 4, April 1987, pp. 53-57.

A major double-stack survey concludes that U.S. railroads will soon have to containerize domestic flows, a massive new market for the box. Included are tables giving statistical data on scheduled transcontinental stack trains, development of the double-stack railcar fleet, and stack-car owners/operators. [From U.S. MARAD's MARIBASE]

57. "West Coast Intermodal Yards." Thomas F. Barnhart. PACIFIC MARITIME MAGAZINE., v. 3, no. 12, June 1986, pp. 11-22.

Defines intermodality, its participants, and new technology in the Western U.S. and Canada. An overview for a reader unfamiliar with terms and issues.

58. "West Coast Ports Respond to Intermodal Demands." Richard Bond. INBOUND LOGISTICS, v. 8, no. 8, August 1988, pp. 20-23.

Describes intermodal facilities implemented at six West Coast ports. Mentions L.A.'s large scale '2020 plan', which will accommodate the huge increase in cargo expected by that time.

CORPORATE & PORT DESCRIPTIONS

1. "Alabama's Intermodal Innovation." CARGO SYSTEMS INTERNATIONAL, Intermodal Supplement, December 1986, pp. 45-47.

   Explains the terminal planning philosophy behind Alabama's Huntsville - Madison intermodal terminal project which is fully automated and accommodates air, rail, and motor carrier modes.

2. "APL Jumps Into Domestic Transportation." Richard Knee. AMERICAN SHIPPER, v. 27, no. 4, April 1985, pp. 33-36.

   American President Companies has placed its intermodal operations under a new subsidiary, American President Intermodal Company. AP Intermodal will be the owner of American President Lines' new light weight double-tiered container railcars, and will manage the railroad and trucking contracts for the line. [From U.S. MARAD's MARIBASE]

3. "Balancing Act for New York?" PORT DEVELOPMENT INT'L, v. 3, no. 12, December 1987, pp. 30-31.

   "Consolidation and modernization" are the key words for improving the container handling activity at the Port of New York and New Jersey. Investment is needed in an unstable period of Atlantic Coast trade and a few of these improvements in the face of risk are described.

4. "Baltimore Cuts a Deal With Chessie System." Robert Hardwick. AMERICAN SHIPPER, v. 27, no. 9, September 1985, pp. 26-27.

   Describes the new "joint marketing program" between the Port of Baltimore (Maryland Port Administration) and Chessie System which includes double-stack service between the Midwest and Baltimore.

5. "Burlington Northern Joins the Intermodal Battle." John Chambers. INTERNATIONAL TRADE & TRANSPORT, April 1988, pp. 11-12.

   Describes BN's "international service packages" formed from international third parties. Representatives from the industry attempt to label this new level of service, which is basically NVOCC. The EDI system is mentioned as centralizing customer needs and carrier availability.

6. "Burlington Northern's Seattle Double-Stacks to Run Daily." Bruce Johnson. AMERICAN SHIPPER, v. 27, no. 4, April 1985, pp. 36-38.

   This article reports on the emergence of the Burlington Northern Railroad as the provider of an ambitious, double-stack container train service between the Port of Seattle and Chicago. [From MARAD's MARIBASE]

CORPORATE & PORT DESCRIPTIONS

7. "CN and CP Seek Differing Intermodal Solutions." Jane R. C. Boyes. CONTAINERIZATION INTERNATIONAL, v. 20, no. 4, April 1986, pp. 66-71.

   Detailed documentation of Canada's two transcontinental railways and approach to intermodalism. Explains the different tactics of each railroad and the "Freedom to Move" philosophy.

8. "CN Rail Refines Its Intermodal Strategy." Frank Malone. RAILWAY AGE, v. 186, no. 5, June 1985, pp. 59-61.

   Explains the evolution, logistics, and economics of CN's planned $200 million investment in intermodalism by 1990. Competition from truckers is the main incentive to investment.

9. "CSLI: A 6-Month Report." Elizabeth Canna. AMERICAN SHIPPER, v. 30, no. 8, pp. 51-52.

   The precedent of CSX/Sea-Land Intermodal (CSLI) reveals the accomplishments and goals of this 6-month old company. Stresses intermodalism as integral to the transportation industry.

10. "CSX/Sea-Land Intermodal Rolls Out." Francis E. Phillips. CONTAINERIZATION INTERNATIONAL, v. 22, no. 7, July 1988, pp. 48-49.

    Portrayal of CSX/Sea-Land Intermodal includes its subsidiaries, route, fleet, and management.

11. "California Ports Rush for Intermodal Gold." Jane R. C. Boyes. CONTAINERIZATION INTERNATIONAL, v. 21, no. 6, June 1987, pp. 62-69.

    Details the Ports of Oakland and San Francisco's plans for improving box traffic. The reasons for LA/Long Beach's success are delineated. Describes the West Coast port industry in general.

12. "Domestic Demand Augurs New Era for U.S. Builders." CONTAINERIZATION INTERNATIONAL, v. 22, no. 10, Oct. 1988, pp. 69-71.

    A report on the major container manufacturers: Stoughton, Freuhauf & Monon. An increase in production is caused by the railroads' adoption of the part piggyback/part container policy. Sizing and design are discussed. Asian influences on the market are mentioned.

13. "Dynamics of West Coast Container Port Competition" Robert Hanelt and Daniel Smith. JOURNAL OF THE TRANSPORTATION RESEARCH FORUM, v. 28, no. 1, 1987, pp. 82-91.

    Report analyzes the impact of intermodal services, ocean carriers' increasing concern with land transportation, and other maritime industry developments over a ten-year period. Charts show containerizable TEU shares and trade activity for West Coast ports. Concludes that "long-term cargo flows are mainly influenced by factors outside the control of the ports."

CORPORATE & PORT DESCRIPTIONS

14. "Florida Investment Fervor." PORT DEVELOPMENT INT'L, v. 3, no. 12, December 1987, pp. 32-33.

    The container-handling expansion of the Ports of Miami and the Everglades are discussed in the context of a national trend and the increase in Florida trade and population.

15. "Flourishing in South Atlantic." Kay Pinckney. WORLD WIDE SHIPPING, v. 50, no. 5, July/August 1987,pp. 24-25.

    A short report on intermodal traffic in the South Atlantic area.

16. "The Future According to Trailer Train." PORT DEVELOPMENT INT'L, v. 3, no. 12, December 1987, pp. 23-24.

    As the leading supplier of intermodal equipment, Trailer Train was asked about its intermodal projections, taken in consideration with economic and trade trends. Tables are included with equipment projection data.

17. "Hays Watkins Plans for CSX and Sea-Land." Jane R.C. Boyes. CONTAINERIZATION INTERNATIONAL, v. 20, no. 11, November 1986, pp. 49-55.

    This article discusses the plans of CSX Corp. to acquire the Sea-Land Corp., pending ICC approval. In this context, the author discusses the crucial role that Sea-Land could play in the efforts of the marketing and distribution division of CSX to develop a network of transcontinental double-stack services. [From U.S. MARAD's MARIBASE]

18. "ICTF Development Outlined." David McKenzie. CARGO SYSTEMS INTERNATIONAL, Intermodal Supplement. December 1986, pp. 39-43.

    Surveys ICTF development in the three primary west coast port centers: Puget Sound, S.F. Bay Area, and L.A. Basin. Equipment and service capacities are outlined.

19. "Intermodalism Comes of Age." Robert Selwitz. INTERNATIONAL TRADE & TRANSPORT, April 1987, pp. 24-28 ff.

    Briefly describes various ports and terminals around the country, and their plans for existing and future intermodal facilities.

20. CSLI: A 6-Months Report." Elizabeth Canna. AMERICAN SHIPPER, v. 30, pp. 51-52.

    The president of CSX/Sea-Land Intermodal (CSLI) reveals the accomplishments and goals of his 6-month old company. Stresses intermodalism as integral to the transportation industry.

CORPORATE & PORT DESCRIPTIONS

21. "Itel Moves into Transportation Forefront," J. David Martin, CONTAINER NEWS, v. 23, no. 11, November, 1988, pp. 16-19.

    A short history of Itel and its subsidiaries is given. The presidents of Itel Transportation Services and Itel Container Corporation are interviewed, and future business strategies are discussed.

22. "Is Intermodalism Compatible with a Just-In-Time System?" Richard Haupt. PRIVATE CARRIER, vol. 25, no. 7, July 1988, pp. 6-8.

    Details the development of Ford Motor Company's Just-In-Time operations which utilizes "tightly controlled" hub centers for its shipments.

23. "L.A. Box Transfer Facility Records Solid Progress." Bel Mongelluzzo. JOURNAL OF COMMERCE, October 20, 1988, p. 2B.

    Reports on the development of the ICTF in L.A., as well as the politics involved in new development.

24. "Montreal Boxes On." PORT DEVELOPMENT INT'L, v. 3, no. 12, December 1987, p. 29.

    The new terminal operating company, Termont, is described, with intermodal projections for the future. A chart of cargo traffic for 1986 and 1987 is included.

25. "New England Intermodal Case Study." R. Harder. PROCEEDINGS OF THE TRANSPORTATION RESEARCH FORUM, v. 25, no. 1, 1984, pp. 122-126.

    Analyzes Conrail's decision to modernize its New England Intermodal facilities and the results achieved. Attempts to apply Conrail's experience to different areas.

26. "NYK Line Expands American Operations." Bruce Vail. AMERICAN SHIPPER, v. 30, no. 8, August 1988, p. 30.

    The reorganization of NYK encompasses three regional headquarters dedicated to domestic intermodal operations.

27. "On-Dock vs. Off-Dock Intermodal Container Transfer Facility Debate Continues." Robert J. Bowman. PACIFIC TRAFFIC, v. 34, no. 6, June 1987, pp. 6-7 ff.

    Describes the philosophies of various ports concerning intermodal container transfer facilities and discretionary cargo. Industry analysts offer their opinions on advantages and disadvantages of such facilities.

CORPORATE & PORT DESCRIPTIONS

28. "Pacific Railheads." Richard Knee. AMERICAN SHIPPER, v. 29, no. 1, January 1987, pp. 25-27.

Describes intermodal facilities at Pacific ports and specifically the Los Angeles/Long Beach ICTF. Port administrators discuss their problems and plans as well.

29. "Port of Tacoma: An Intermodal Trend Setter." Bruce Johnson. CONTAINER NEWS, v. 88, no. 10, October 1988, pp. 24-26.

Description of the Port of Tacoma's ICTF, which has two on-dock intermodal rail facilities within a 25-acre site.

30. "Ports Rise to Meet the Challenge." Mark North. CARGO SYSTEMS INTERNATIONAL, Intermodal Supplement. December 1986, p. 35-39.

Overview of the changes occurring in the West Coast ports as a result of increased intermodalism. Problems and developments within specific ports are discussed.

31. "Railroads Go Intermodal to Regain Business Lost to Truckers." Deborah H. Noxon. INTERNATIONAL TRADE & TRANSPORT, April 1987, pp. 39-40 ff.

A manager of Norfolk Southern Corp. discusses her views of intermodalism and plans which include offering faster, flexible, damage-free freight service. Mentions Road Railer as a helpful extension of NS rail service.

32. "Sea-Land Redefines its Intermodal Strategy." Jance R.C. Boyes, CONTAINERIZATION INTERNATIONAL, v. 18, no. 12, December 1984, pp. 62-63.

As part of its strategy for expanding its intermodal operations (scheduled for implementation through 1985-1986 and beyond), Sea-Land Service will provide its own double-stack cars, control its own rail container terminals, and eventually invest in a fleet of 45 ft. boxes. [From U.S. MARAD's MARIBASE]

33. "Small is Beautiful." CARGO SYSTEMS INTERNATIONAL, Intermodal Supplement, December 1986, p. 9.

Description of Palmer, Massachusetts' inland seaport, which is part of a wider economic development plan for the area.

34. "South Atlantic Ports Key on Intermodal Services." CONTAINER NEWS, v. 23, no. 8, August 1988, pp. 32-37.

Reviews the impending improvements for the South Atlantic container ports, which are experiencing an increase in business: Wilmington, Charleston, Savannah, Jacksonville, Palm Beach, Port Everglades, and Miami.

CORPORATE & PORT DESCRIPTIONS

35. "Southern Pacific And The Growth Of Domestic And International Containerization." Denman K. McNear. Address to the INTERNATIONAL INTERMODAL EXPO. 1988, Atlanta, Georgia, April 20, 1988.

    Southern Pacific's view of an emerging network including both international and domestic container movements. Topics include the importance of California in balancing traffic and the growing commonality of equipment among modes.

36. "Technological Change and Multimodal Freight Competition." J. L. Courtney. PROCEEDINGS OF THE TRANSPORTATION RESEARCH FORUM, v. 25, no. 1, 1984, pp. 116-121.

    Multimodal structural changes in Newfoundland over the past 10 years are described and applied to the situation in the U.S. Domestic containerization is mentioned as a major factor in the transformation.

37. "U.S. Railroads Follow the Intermodal Line." Francis E. Phillips. CONTAINERIZATION INTERNATIONAL, v. 18, no. 6, June 1984, pp. 73-77.

    Documents the emerging intermodal industry in 1984. Includes charts of intermodal movements by various railroad lines. Emphasis is on the "new" hub centers.

38. "Vancouver to Double Capacity by 2000." Bruce Johnson. AMERICAN SHIPPER, v. 30, no. 11, November 1988, pp. 74-78.

    Describes the proposed improvements in Vancouver's Port Corporation which will double its container capacity by the year 2000.

39. "West Coast Ports Develop ICTF Facilities." Michael D. White. PACIFIC TRAFFIC, v. 33, no. 9, September 1986, pp. 14-17 ff.

    Describes the West Coast ICTFs and the justification for building facilities. Also enumerates facility capabilities.

40. "What VIP means to NS." RAILWAY AGE, v. 189, no. 9, September 1988, pp. 51-53.

    The impending opening and possibilities of the Virginia Inland Port are described. It will be a rail-truck intermodal terminal linked to Virginia Port Authority's Hampton Roads terminal by dedicated rail. It will cater to containerships unwilling or unable to move up the Port of Baltimore, and provide competition for that port.

RAIL INTERMODAL TERMINALS

1. "Chicago Yards Gear Up for Double-Stack Action." CONTAINERIZATION INTERNATIONAL, v. 20, no. 5, May 1986, pp. 60-65.

   Following visits to several Chicago rail yards that are handling stack cars, the author takes a look at the differing systems that are emerging. [From U.S. MARAD's MARIBASE]

2. "Design Considerations for Intermodal Container Transfer Facilities." Arthur Goodwin. Washington, D.C.: TRANSPORTATION RESEARCH BOARD STATE OF THE ART REPORT 4, 1986, pp. 48-51.

   The Ports of Los Angeles and Long Beach were faced with the common problem of overcoming the distance and travel time between the marine container terminals and the existing intermodal rail terminals. The solution was for the ports to develop a major intermodal container transfer facility or several smaller facilities within or in close proximity to the harbor complex. Various studies including an engineering feasibility study were conducted to determine the most efficient rail terminal layout and operational characteristics. [From the introduction.]

3. "Design Issues Related to the Intermodal Marine-Rail Interface." M. John Vickerman Jr., Washington, D.C.: TRANSPORTATION RESEARCH BOARD STATE OF THE ART REPORT 4, 1986, pp. 48-51.

   A major modernization program currently taking place at the Port of San Francisco illustrates the considerations and constraints involved in planning a state-of-the-art intermodal marine facility. Impediments to designing modern intermodal marine-rail facilities include problems such as lack of land for expansion of existing facilities and modification of existing facility requirements to accommodate variations in equipment and operations.

4. "EDI Helps Speed Terminal Operations." MODERN RAILROADS, v. 43, no. 19, November 1988, pp. 26-27.

   Describes the role electronic data interchange will play in the impending Rail-Bridge terminal, a new inland double-stack terminal in Elizabeth, New Jersey.

5. "Expansion and Development of Santa Fe's Corwith Intermodal Facility." H. Hall. Washington, D.C.: TRANSPORTATION RESEARCH BOARD STATE OF THE ART REPORT 4, 1986, pp.52-54.

   The Corwith railroad terminal was established in 1888 as the eastern terminus for Santa Fe trains, was sufficient for the trains of 100 years ago but hardly adequate for mid-twentieth century trains. With the advent of piggybacking, it was necessary to purchase additional land for intermodal facilities. [From the Introduction]

CORPORATE & PORT DESCRIPTIONS

35. "Southern Pacific And The Growth Of Domestic And International Containerization." Denman K. McNear. Address to the INTERNATIONAL INTERMODAL EXPO. 1988, Atlanta, Georgia, April 20, 1988.

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RAIL INTERMODAL TERMINALS

6. "A Global First for CNW." Jane R.C. Boyes. CONTAINERIZATION INTERNATIONAL, v. 20, no. 12, December 1986, pp. 55-57.

   The author reports on her visit to Chicago and North Western's $36 million double-stack Chicago facility, scheduled to open in December 1986 as the first railroad terminal dedicated solely to dealing with double-stack trains. According to the author, the yard could be handling up to 700,000 TEU's by the end of 1987. [From U.S. MARAD's MARIBASE]

7. "Intermodal Rail Terminals: Trends in Design and Operating Sytems." S.G. Howard. PROCEEDINGS OF RO-RO, 1986, May 13-15, 1986, Goteborg, Sweden, pp. 246-253.

   Trends in design and operating systems for intermodal rail terminals are examined. Discussion is focused on three main topics: terminal equipment and construction; computer application in terminal design; and rail movement options. [From U.S. MARAD's MARIBASE]

8. "New Intermodal Concepts at the Port of Tacoma." R. L. MacLeod. Washington, D.C.: TRANSPORTATION RESEARCH BOARD STATE OF ART REPORT 4, 1986, pp. 55-61.

   In 1985 the Port of Tacoma completed two new railroad intermodal facilities that embody a whole series of features that are unique in the port industry. About 80 percent of all imported container traffic coming into Tacoma is destined for U.S. markets in the Midwest and on the East Coast. This makes the port's intermodal rail connections a vital link in assuring that container cargo coming in through the port is moved rapidly to its final destination. [From the introduction]

9. "Santa Fe's System Approach to Intermodal Control." W. Spencer Seery. Washington, D.C.: TRANSPORTATION RESEARCH BOARD STATE OF THE ART REPORT 4. 1986, pp. 101-111.

   The purpose of this paper is to show how Santa Fe Railway used an integrated computer system to manage the physical operation of major intermodal ramps. The main benefit of this system is the ability to take information used predominantly to support one particular area of the operation and blend it with information gathered for other areas to support the entire intermodal facility.

10. "Southern California's ICTF is Up and Running." Jane. R.C. Boyes. CONTAINERIZATION INTERNATIONAL, v. 21, no. 3, March 1987, pp. 59-61.

    The intermodal container transfer facility (ICTF), jointly developed by Southern Pacific Transportation Company (SP) and the Ports of Long Beach and Los Angeles, was officially opened on January 15, 1987. It is expected that it will handle up to 280,000 containers during its first full year of operations. [From U.S. MARAD's MARIBASE]

INTERMODAL MARKETING

1. "BN Goes After LCL Imports." Bruce Johnson. AMERICAN SHIPPER, v. 29, no. 6, June 1987, p. 30.

   Describes BN's less-than-container-load service for international shipments moving through Pacific Northwest ports, using third parties for the service rather than in-house expansion. The program is open to customs house brokers, freight forwarders, cargo consolidators, and NVOCC companies.

2. "BN's Extraordinary Expediters." F. K. Plous. RAILWAY AGE, v. 188, no. 11, November 1987, pp. 30-36 ff (48).

   Describes Burlington Northern's Expediter trains which are short, fast, frequent intermodal trains competing with trucks in the short-to-medium distance range. Discusses segmentation of the railroad's services to accommodate different markets.

3. "Domestic Containerization: Creating New Markets." Steve Wilhelm. Marine Digest, Oct. 4, 1986, pp. 11-15.

   A summary of the 27th annual Transportation Research Forum where experts discuss several aspects of domestic containerization, including the marketing of railroad services to meet the needs of the trade. Weight/size alternatives, cost simulations, and requirements for efficient containerization are discussed.

4. "For Retailers It's the Year of Living Dangerously." F.K. Plous, Jr. INTERMODAL AGE, v. 4, no. 5, September/October 1988, pp. 2-6.

   Projections for third party involvement in thie intermodal industry are given by intermodal marketers. Consolidation of third parties seems to be the emerging trend.

5. "Improving Intermodal Transit: The Motor Carrier's Side." William Walsh. PACIFIC SHIPPER, v. 63, no. 10, May 16, 1988, pp. 26-27.

   A plea for third parties and railroads to act as a "unified network" by being more responsive during the drayage process. He gives tips on "completing the service cycle" effectively so the customer can receive the product on time.

6. "Improving the Profitability of the Intermodal Industry." William E. Greenwood. INTERMODAL FORUM, Summer 1987, pp. 23-25.

   Identifies three profitability variables: labor cost, terminal cost, and equipment cost. Also pinpoints market opportunities, equipment management, conversion of motor carriers to intermodal, and diversion of all-water international business to land bridges.

INTERMODAL MARKETING

7. "Intermodal Networking." L. Stanley Crane. INTERMODAL FORUM, Summer 1987, pp. 17-20.

   Gives examples of new services marketed by different rail lines. Encourages "product improvement," which is a new concept to railroads.

8. "Intermodal Promise Springs Extension in Atlanta." Greg Borzo. MODERN RAILROADS, v. 43, no. 10, June 1988, pp. 35-39.

   Summary of the International Intermodal Expo. Among topics discussed: profitability margin, better labor contracts, higher service standards, increased containerization of bulk commodities.

9. "Market Survey Outlines Future Sources of Intermodal Rail Cargo." Don Cole. PACIFIC TRAFFIC, v. 33, no. 5, May 1986, pp. 10-12 ff.

   Trailer Train conducted an intermodal market survey and concluded that it has "natural boundaries of segmentation," based on size of container. Discusses issues regarding the Teamsters, third parties, and major intermodal customers.

10. "The Necessity for Domestic Containerization." Arnold B. McKinnon. INTERMODAL FORUM, Summer 1987, pp. 17-20.

    A Norfolk Southern representative maintains that traffic imbalance is the greatest obstacle to continued container growth and consistent competitive price levels and believes in third parties and customized sservices.

11. "The New Sea-Land Strategy." PORT DEVELOPMENT INT'L, v. 3, no. 12, December 1987, p. 35.

    A report on the development of Sea-Land's master plan, which includes an increase in intermodal activity, more efficient container handling, and new vessels.

12. "Projecting the Intermodal Image." Mark North. CARGO SYSTEMS, v. 14, no. 5, May 1987, pp. 83-85.

    A summary of papers presented at the Intermodal Transportation Association Conference. Analysts felt that intermodal operators were losing business because of a lack of marketing techniques, or because they are not making their advantage known to the correct audience. Suggestions include marketing to banks and financiers, and to small shippers and clients with fragile merchandise. It was suggested that problems in image would be overcome by a positive marketing plan.

INTERMODAL MARKETING

13. "Santa Fe Grabs 4% of Intercity Market Share; Sets Goal of 7%." Matthew LaMourie. AMERICAN SHIPPER, v. 30, no. 7, July 1988, pp. 58-61.

    Describes how truck supercarriers are challenging the stack train market, which presently has the lowest cost structure.

14. "Railroads Create New Programs to Challenge Their Competitors." Joan Whiley. PACIFIC SHIPPER, v. 62, no. 12, June 1, 1987, pp. 6-10.

    Describes the newest developments undertaken by several railroads, and attempts to explain the innovative marketing strategies discussed by industry analysts and company representatives.

15. STOP, LOOK AND STUDY: HOW THE "PHANTOM FIVE FEET" ARE WRECKING THE INTERMODAL BALANCE SHEET AND WHAT YOU CAN DO ABOUT IT. Harry J. Bruce. Atlanta, Georgia: International Intermodal Expo, May 29, 1986.

    A criticism of the railroad industry for not participating in common marketing techniques in order to utilize present resources more effectively. Maintains that the "phantom five feet" (5 feet added on to the 40 foot trailer) are causing profit loss due to underutilization by shippers. Offers some concrete suggestions for areas of study.

16. "Strengthened Profitability, Service Quality, and Infrastructure to Trigger Intermodal Changes." William E. Greenwood. PRIVATE CARRIER, v. 25, no. 7, July 1988, pp. 9-10.

    Author predicts large-scale changes in the intermodal field in the near future, and cites the role of personnel and information systems development in achieving equipment and terminal productivity increases. Such increases are required to overcome the marginal profitability of intermodal traffic.

DOUBLE-STACK TRAINS

1. "American President Lines, Transway, SP and BN Begin Trailer Balancing Program." MODERN RAILROADS, v. 38, no. 8, August 1983, p. 61.

   Announces the experimental stack trains (1983) of APL and Transway, in attempts to improve their economics, but not necessarily market share.

2. "Burgeoning Double-Stacks." Richard Knee. AMERICAN SHIPPER, v. 27, no. 8, August 1985, pp. 6-9.

   Documents the development of double-stack trains at this time, and specifically USL and NYK. Chart includes services operating for 1985.

3. "Burlington Container Decision - Domestic Piggyback to Go." Robert S. Ingram. CONTAINERIZATION INTERNATIONAL, v. 22, no. 6, June 1988, pp. 48-51.

   Burlington Northern Railroad decides to introduce domestic containers and double-stack cars, largely displacing the conventional trailer on flatcar piggyback technology used in its domestic Expediter intermodal network. Ingram, the new vice president, discusses his plans for BN and the direction of domestic containerization.

4. "The Challenge of Double-Stacks." David McKenzie. CARGO SYSTEMS INTERNATIONAL, Intermodal Supplement, December 1986, pp. 54-54.

   Discusses problems in double-stack operations, and suggests solutions. Mentions ship-railroad coordination, terminal operations, car-loading, and container "blow offs."

5. "Challenge Match: APL's Double-stack Linertrain." Mark Magnier. AMERICAN SHIPPER, v. 26, no. 9, September 1984, pp. 18-22.

   Describes some of the initial successes and problems of APL's Linertrain, which had been running for 1-1/2 months at the time of this article.

5. "Common Use vs. Dedicated Stack Trains." Bruce Johnson. AMERICAN SHIPPER, v. 29, no. 8, August 1987, pp. 56-57.

   Discusses the advantages of "block space" utilized on stack trains, as opposed to dedicated trains. Hanjin's use of BN's "cooperative" service is given as an example.

6. "Conrail Sees Domestic Double-Stack in Its Future." Robert Roberts. MODERN RAILROADS, v. 43, no. 7, April 1988, pp. 24-26 ff.

   Predicts growth of domestic double-stack, decline of piggyback. Conrail is moving toward a double-stack service for larger containers competitive with trailers by the 1990s. Includes checklist for improving intermodal profitability.

DOUBLE-STACK TRAINS

7. "Counting the Cost of Double-Stacks." David MacKenzie. CARGO SYSTEMS INT'L, v. 13, no. 5, May 1986, pp. 65-66.

   Examines the cost savings of double-stacks as compared to conventional TOFC/COFC cars. The estimated 40% savings must be combined with efficient backhaul operations and smaller crews in order to decrease labor costs.

8. "Dallas/Denver All-Box Service." Bruce Johnson. AMERICAN SHIPPER, v. 30, no. 6, June 1988, p. 44.

   Describes BN's new domestic stack service which will phase out its piggybacks on this 800-mile run. Centralization of pricing, marketing, and operations is the key factor. New asst. vice president views a mixture of intermodal equipment as favorable.

9. DOUBLE-STACK CONTAINER NETWORK POTENTIAL FOR NEW YORK STATE FREIGHT TRAFFIC. Greenwich, CT: Reebie Associates, February 28, 1986. 14+ p.

   This study documents the cost of handling freight via a double-stack network and its potential impact in New York State. It established: 1) traffic database; 2) cost-service profiles of transportation options; 3) comparison of competing modes on cost and delivery-time basis and an estimate of the potentially divertible traffic.

10. "Double-Stack Container Trains: Issues and Strategies for Ocean Carriers." Henry Marcus and Carl Martland. TRANSPORTATION RESEARCH RECORD 1088, 1986, pp. 18-20.

    Double-stack container trains are studied from the perspective of an ocean carrier. Use of double-stack container trains for ocean carriers involves such considerations as the origin and destination of the trains, the choice of the party to manage the rail movement, and the size of the containers. In the final analysis, the ocean carrier must determine how these issues can be integrated into its overall corporate strategy.

11. "Double-Stack Container Trains May Cut Costs For Pacific Rim Exporters." USDA NEWS FEATURE, U.S. Department of Agriculture, Washington, D.C. November 24, 1987.

    The efficiencies of double-stack cars and low westbound backhaul rates may be of particular value to agricultural exporters.

12. "Double-Stack Container Trains: Potential For Agricultural Exports." TRANSPORTATION FACTS, U.S. Department of Agriculture, Office of Transportation, Washington, D.C. August 1987.

    Overview of history of double-stack container services as of July 1987, with emphasis on the needs of agricultural exporters. Includes a list of double-stack trains and carrier contacts.

DOUBLE-STACK TRAINS

13. "Double-Stack Containers on Rail Cars: the APL View." E. K. Pentimonti. Washington, D.C.: TRANSPORTATION RESEARCH BOARD STATE OF THE ART REPORT 4, 1986, pp. 48-51.

A brief overview is given of the development, economic benefits, operation, and terminal facility requirements of American President Lines' double-stack container rail car system.

14. "Double-Stacked Container Trains: Potential for Exports and Domestic Perishables." U.S. D.O.T./F.R.A. Internal Memorandum on U.S. Dept. of Agriculture - OUTLOOK '88 Session, December 2, 1987.

A report on this US.D.A.-sponsored double-stack session, which included representatives from APL and CNW, who spoke of economics and new developments in double stack service.

15. "Double-Stack Design Develops." PORT OF DEVELOPMENT INTERNATIONAL, v. 4, no. 4, April 1988, pp. 22-23.

Double-stack trains are a North American innovation made possible by high-volume, long-distance container movements that are not subject to any height restrictions of the sort that apply in Europe. The design changes made by the two principal manufacturers of stack trains as a result of several years of experience are discussed. [From U.S. MARAD's MARIBASE]

16. "Double-Stack Operators Poised for Domestic Push." Greg Borzo. TRAFFIC WORLD, April 20, 1987, pp. 19-23.

Interviews with several industry leaders and consultants reveal agreement on the potential for further double-stack expansion and domestic containerization.

17. "Double-Stack Savings May Equal 20-25%." Robert Hardwicke. AMERICAN SHIPPER, v. 27, no. 8, August 1985, pp. 10-16.

Attempts to compare all-water and landbridge costs and markets (includes chart). Concludes that the only survivors of all-water service may be the large worldwide shippers or those with very efficient truck transfer capabilities.

18. "Double-Stack Trains: Bringing the Box Back Home." Jon Jacobs. BRANDON'S SHIPPER & FORWARDER, January 20, 1986, pp. 6-10 ff.

The future of double-stacks is discussed according to various company representatives. Infrastructure and terminal capabilities are mentioned as major obstacles.

DOUBLE-STACK TRAINS

19. "Double-Stack Trains: Economic and Institutional Factors." Boston: Policy & Management Associates for U.S. Dept. of Transportation, June 1986, 35 p.

    Examines economic factors and institutional viewpoints of the double-stack industry. Includes hypothetical cost factors and policy descriptions and suggestions.

20. DOUBLE-STACK UNIT TRAIN CONTAINER SERVICE: ITS COMMERCIAL IMPACT AND VALUE TO THE MILITARY SHIPPER. Karl-Heinz Bernhardt. Monterey, CA: Naval Postgraduate Thesis, December 1986, 70 p.

    The purpose of this thesis is to educate the military transporter on double-stack train developments. A very comprehensive overview which includes pictures and extensive description of equipment and a list of sources. It also examines such issues as efficiency, future cooperation between modes, and impact on military shippers.

21. "Double-Stacking: A Maritime View." Maurice T. Hesterman. RAILWAY AGE, v. 186, no. 5, May 1985, pp. 46-48 ff.

    The economic appeal of the double-stack is explained, as well as its relatively "late" development.

22. "Double Stacking to Alaska." CARGO SYSTEMS INT'L, v. 14, no. 1, January 1987, pp. 55-57.

    The Alaska Hydro-Train (AHT) which operates from Seattle and contains consumer goods construction materials, and oil-related commodities is capturing a high percentage of the Alaskan transportation market. Describes AHT's double-stack.

23. "Double Stacks Coast-to-Coast." Wayne Monger. CTC BOARD, July 1987, pp. 41-55.

    In-depth analysis of the double-stack business from its beginning to present state. Describes the individual shipping and rail companies involved, with specific information on routes and schedules.

24. "Double-Stacks for Big Stakes." Bruce Johnson. CONTAINER NEWS, v. 21, no. 11, November 1986, pp. 18-22.

    Southwest gateway intermodal business developments are described. Los Angeles' large population/industrial base fills westbound containers consistently and that city has the maximum clearance of any port area on the West Coast. Terminal developments and logistics are also discussed.

25. "Inland at the Double." Francis E. Phillips. CONTAINERIZATION INTERNATIONAL, v. 20, no. 1, January 1986, pp. 49-57.
    Details the evolution of APL's and Sea-Land's stack car configurations. The stack services are compared to piggyback.

DOUBLE-STACK TRAINS

26. "Linertrains Criss-Cross Country as New Shipping Trend Explodes." John LoDico. TRAFFIC WORLD, v. 202, no. 3, April 15, 1985, pp. 19-21.

    Describes the burgeoning of double-stacks in 1985 and the profitability factor and pricing structures.

27. "More Carriers Offer Stack Trains." Robert Selwitz. INTERNATIONAL TRADE AND TRANSPORT, April 1987, pp. 30-36 ff.

    An overview of the double-stack trends at this time (April 1987) and locations that the different rail lines serve. Analysts and rail and shipping representatives discuss their philosophies and projections for the industry.

28. Press Release, Santa Fe Southern Pacific Corporation, Los Angeles: Corporate Communications Dept., July 14, 1986.

    Announcement of SF's new domestic container service between Modesto, California and Chicago-Kansas City, which features double stacks both eastbound and westbound, designed to cater to wine and canned goods shippers of the San Joaquin Valley.

29. "Operating Characteristics of the Double-Stack Container Train." Maurice Hesterman. MARAD, Great Lakes Region Report, 1985, 22 p.

    Topics discussed include the following: the economic advantages of moving commodities in double-stacked containers; the design of double-stack rail cars; and the operations of APL, Sea-Land and Burlington Northern Railroads double-stack trains. [From U.S. MARAD's MARIBASE]

30. "Reefer Boxes Set for Double-Stack Take Off?" Mark North. CARGO SYSTEMS INTERNATIONAL, Intermodal Supplement, December 1986, pp. 15-17.

    Describes APL's experiements in double-stack reefers to the midwest and the particular problems attributed to them: special loading patters; a daily flexible schedule; refueling problems; reluctance on the part of shippers to switch to this mode. Suggests that in order to make it feasible, it must be a "combination of technology, marketing and logistic control."

31. "Riding the Wings of a Stack Train Through the Feather River Canyon." Steve Schmollinger. PACIFIC RAIL NEWS, May 1988, pp. 21-31.

    A detailed description of a stack train operation, which includes route and line information and new equipment improvements.

32. "Santa Fe/Conrail Domestic Stacks." AMERICAN SHIPPER, v. 30, no. 8, August 1988, pp. 56-58.

    Discusses Santa Fe's transcontinental stack-train service aimed at domestic shippers and the wide variety of equipment being made available. Emphasis is placed on its goal for an increase in its intermodal business.

DOUBLE-STACK TRAINS

33. "Securing Double-stack Benefits." David McKenzie. CARGO SYSTEMS INTERNATIONAL, v. 13, no. 1, January 1986, pp. 21-23.

Double-stack safety features, terminal handling efficiency, and ride quality are evaluated and compared to conventional flatcars. Bulkheads, interbox connectors, and flippers are discussed. Concludes that relative operating and terminal handling costs will determine which design will be most effective.

34. "Should Ports Run Their Own Stack Trains?" Richard Knee. AMERICAN SHIPPER, v. 30, no. 8, August 1988, pp. 54-56.

Describes the proposed SCORE operation: Southern California Overland Rail Express service operating out of Long Beach and Los Angeles, which could serve "second- and third-tier" ocean liners. Legal implications and carrier reactions are discussed.

35. "Stack Car/Road Rail Test." Bruce Johnson. AMERICAN SHIPPER, v. 30, no. 6, June 1988, pp. 46-50.

Representative of Gunderson describes new rail car developments, including the coupling of Road Railers with stack cars. Also describes the Maxi-Stack cars, which are geared toward both domestic and international markets. Plans for new auto containers are also discussed.

36. "Sizing Up the Domestic Container." Henry Boyd. CARGO SYSTEMS INTERNATIONAL, v. 13, no. 5, May 1986, pp. 59-63.

Experimentation with the design of domestic containers is discussed. Cost, weight, dimensions, interfacing capability, and load conditions are considered.

37. "Stack-Car Makers: Who's on First?" Richard Knee. AMERICAN SHIPPER, v. 27, no. 8, August 1985, p. 18.

Rates Gunderson, Thrall, and ACF in terms of cars in service and cars on order.

38. "Stack Trains Cut Costs at Maytag." Andrea Chancellor. JOURNAL OF COMMERCE, June 10, 1987, p. 28.

The first double-stack service in Iowa is due to the dedicated cargo of Maytag Co., which has significantly reduced its transportation costs.

DOUBLE-STACK TRAINS

39. "Truckload Carriers to Face New Pressure from Double-Stack and Road Railer Service." John G. Larkin. PRIVATE CARRIER, v. 25, no. 8, August 1988, pp. 27-29.

    Concludes that double-stacks are still at a disadvantage because of capacity constraints at high-density terminals, problems with drayage operations, and shipment tracing problems. However, growth of piggyback traffic and replacement with double-stacks and Road Railers will penetrate the medium-to-high density, long-haul truck lanes (non-service oriented).

40. "U.S. Domestic Containerization Takes Hold." Francis E. Phillips. CONTAINERIZATION INTERNATIONAL, v. 22, no. 4, April 1988, pp. 52-59.

    Reference article on the development of double-stack trains and the leaders in the industry, namely American President. Contains charts on stack train growth and corridors. Politics and trends in the industry are discussed.

41. "The U.S. Double-Stack Bandwagon Rolls: So Who Is Following It Now?" Francis E. Phillips. CONTAINERIZATION INTERNATIONAL, v. 20, no. 3, March 1986, pp. 63-69.

    Developments in the double-stack business are discussed, including size considerations and price disputes. A chart of principal operators and their routes and capacities is appended.

ROAD RAILER, TRAILER TRAIN, AND PIGGYBACK

1. "Can Third Parties Fill BN's Boxcars." Bruce Johnson. AMERICAN SHIPPER, v. 30, no. 7, July 1988.

   BN's attempt to market its boxcar backhaul from the Midwest to the Northwest, utilizing third parties, will not jeopardize its own domestic container and piggyback car programs.

2. "ICC Lifts Regulation of Rail Piggyback Service." ICC NEWS, February 19, 1981, 12 p.

   Explains the decision of the ICC to exempt TOFC/COFC from federal regulation in order to "stimulate improvements in service." It did not, however, grant the setting of piggyback rates antitrust immunity.

3. "...Let's Make it Work." Carl Wesselmann. MODERN RAILROADS, v. 41, no. 5, May 1986, pp. 26-30.

   Railroad executives discuss the future of piggyback at the 1986 MODERN RAILROADS' Intermodal Conference, agreeing that intermodalism is "the most hopeful development for the old business in over two decades," but disagreeing on other issues, including labor, equipment and service requirements.

4. "Marketing a New Technology." Bruce Johnson. CONTAINER NEWS, v. 22, no. 11, November 1987, pp. 23-27.

   Detailed description of Road Railer and its accompanying equipment, as well as the marketing strategy used by this company.

5. "Piggyback Faces 'The Profitability Challenge.'" PROGRESSIVE RAILROADING, May 1985, pp. 30-34.

   Maintains that double-stacks will complement piggybacks, if piggyback services provide improved management and facility control. Evaluates the market at this time, projecting a surge in the industry.

6. "Piggyback in Transition." PROGRESSIVE RAILROADING, November 1983, pp. 43-48.

   Describes the hub center concept and terminal and equipment innovations in 1983.

7. "Piggyback Puts on a Show." PROGRESSIVE RAILROADING, April 1984, pp. 44-54.

   Previews the issues and equipment to be discussed at the 1984 National Intermodal Forum and Piggyback Exposition. Various railroad company executives give their opinions on the future of piggyback.

8. "Prospects for Leadership." Carl Wesselmann. MODERN RAILROADS, v. 42, no. 4, April 1987, pp. 33-36.

Production has increased for piggybacks but profitability has lagged, and this article suggests a few reasons why. Quotes mainly from an unofficial ICC study. Road Railer and double-stacks are seen as integral parts of the intermodal system.

9. "Putting Road Railer to Work - In a Big Way." James Abbott. MODERN RAILROADS, v. 43, no. 12, July 1988, pp. 23-27.

Describes plans to run high capacity, or "superwedge," trains through a hub and spoke system centered in Kansas City. Definitions of the system and market, and industry requirements are included.

10. "Trailers Ride Rails." John Fey. INFO MAGAZINE, April 1988, pp. 16-17.

Pictures and simplified description of Road Railer service. Company representatives emphasize cheaper cost, faster service, and smoother ride than conventional modes.

11. "The Use of Run-Through TOFC Trains as a Substitute for Motor Carrier Service." Allan Schuster. PROCEEDINGS OF THE TRANSPORTATION RESEARCH FORUM, v. 22, no. 1, 1981, pp. 195-202.

Attempts to project estimated costs, revenues, service, and freight traffic of TOFC trains between a midwestern consolidating point and a southwestern distribution point. Compares estimates to freight trucks and concludes that it would be very profitable and a shot in the arm for the railroad industry.

12. "Wheels Within Wheels." CARGO SYSTEMS INTERNATIONAL, Intermodal Supplement, December 1986, pp. 21-25.

Discusses the issues involved in adopting Road Railer technology. Mentions labor disputes as a major impediment.

TRUCK COMPETITION

1. "An Assessment of the Rail Competitive Motor Carrier Industry." K. Eric Wolfe, et al. JOURNAL OF THE TRANSPORTATION RESEARCH FORUM, v. 28, no. 1, 1987, pp. 289-301.

   Paper examines intercity truckload competitive factors: changes in equipment, mileages, wages, commodities, etc. Attempts to define trends in the industry which have improved its competitiveness. Concludes that mixed commodities, non-union drivers, larger trailers, and increased productivity have contributed positively.

2. THE FEASIBILITY OF NATIONWIDE NETWORK FOR LONGER COMBINATION VEHICLES: IMPACTS OF LONGER COMBINATION VEHICLES ON RAILROADS. Ronald Mauri and Robert Stearns. Cambridge, MA: U.S. D.O.T. Transportation Systems Center, July 1986, 86 p.

   Report on the impact of the 1987 Surface Transportation Assistance Act and an impending longer combination vehicle network on the railroad industry.

3. "Odd Men Out? Trucks Begin to Stake Their Claim in Intermodal Marketplace." Joanie Mackowski. PACIFIC SHIPPER, v. 63, no. 33, October 24, 1988, p. 11.

   A summary of the issues raised at the 1988 ATA Management Conference and Exhibition, entitled "Conceptions and Misconceptions of Intermodal Trucking." Participants were urged to expand their concepts of drayage and flexibility was encouraged.

4. "Roads Needs More Than Double-Stacks To Capture Larger Share of Market." DeMaris A. Berry. TRAFFIC WORLD, October 28, 1987, pp. 37-38.

   A representative of Strick Corp. told the National Association of Shippers' Agents that railroads must offer a complete package of equipment, price, and service to compete with trucks. Representatives of Trailer Train, Greenbrier Intermodal, XTRA Corp., and Transamerica Distribution Services were in substantial agreement.

5. "Road vs. Rail: Shippers Base Decisions on Rates, Equipment, Reliability." Robert Bowman. PACIFIC SHIPPER, v. 63, no. 33, October 24, 1988, pp. 7-8.

   Industry representatives and analysts offer their opinions on the truck vs. rail issue. Shippers perceptions of rail service are still fairly negative. Rail's impediments to lower costs and better service are outlined.

6. "Truckload Update: Remaining Opportunity for Private-Carriage Conversion." John G. Larkin. INDUSTRY COMMENT, Alex Brown and SMS Research Transportation Group, August 18, 1988, 6 p.

   This report claims that a large opportunity still exists in lanes under 500 miles in length for truckload carriers, despite the private to common carriage conversion due to deregulation. Author recommends those carriers with tight control systems.

OTHER COMPETITORS

1. "Fuel Use Simulations of High Productivity Container Trains." Daniel S. Smith, PROCEEDINGS OF THE TRANSPORTATION RESEARCH FORUM, v. 25, no. 1, 1985.

   An engineered cost model used to project fuel consumption for existing double-stack container trains and hypothetical integral intermodal trains between Los Angeles and Chicago. The author found the HPIT could reduce fuel consumption by 12% compared to conventional double-stacks. Examines many design factors in detail and discusses the implications of the study for the industry.

2. "Jumping Off The Bandwagon." Chris Hanrahan. CARGO SYSTEMS INTERNATIONAL, Intermodal Supplement, December 1986, P. 33.

   Describes Robert Ranck's Trailer Xpress Company. A firm disbeliever in double-stack services, he intends to operate his trains with much more flexibility and more cost effectively than double-stacks.

3. "High Productivity Trains: How Integral? How Imminent?" John H. Armstrong. RAILWAY AGE, v. 188, no. 9, September 1987, pp. 43-51.

   Meticulous description of the HPITs augmented by a picture-chart which outlines the attributes of various trains. Equipment and terminal logistics are discussed, as well as implications for the future.

MULTIMODALISM AND INTERNATIONAL INTERMODALISM

1. "Cards Not Stacked Against Double-Stack." Andrea Chancellor. MODERN RAILROADS, v. 43, no. 19, p. 9.

   Discusses the implications for next year's U.S.-Canadian free trade agreement as it relates to the double stack industry. Author feels Canadians are too cautious in implementing double stack service, and may "lose out" because of it.

2. "Confronting Intermodal Challenges in a Global Market." R. D. Frick. THE PRIVATE CARRIER, v. 25, no. 7, pp. 13-14.

   Describes Honda's commitment to quality multimodal services and community responsibility via Honda International Trading Co. which fills inbound containers for return movement back to Japan.

3. "Intermodalism - the European Experience." Jeremy Lowan. CARGO SYSTEMS, v. 13, no. 4, April 1986, pp. 28-31.

   An overview of European domestic containerization which developed out of the formation of European box dimensions. A comparison between the U.S. and Europe reveals similarities in intermodal theory, but many technical differences, largely due to population density and individual government subsidies.

4. "Stack to Rail Handling Costs Analyzed." M.B. Marsden. CARGO SYSTEMS INTERNATIONAL, v. 9, no. 6, June 1982, pp. 58-59.

   Theoretical costs (British) are applied to seven different configurations. Concludes the most cost effective method is lifting directly from stack to rail. If this is not possible, the study recommends that the rail should be close to the container stack and the berth should manage the rail terminal.

INTERMODAL HISTORY

1. "53 Foot Container for Domestic Use." AMERICAN SHIPPER, v. 30, no. 5, May 1988.

   Announcement by APL to use 53-foot containers for domestic use, which can ride on the upper tier of APL stack trains. Documents fleet increase in containers and chassis as well.

2. "All About Containers." David G. Casdorph. RAILROAD MODEL CRAFTSMAN, July 1986, pp. 80-87.

   Precise description of containers currently used in industry. Identifier codes are also charted.

3. "American President Lines, Transway, SP and BN Begin Trailer Balancing Program." MODERN RAILROADS, v. 38, no. 8, August 1988, p. 61.

   Documents the use of the first stack car unit train used for front and backhaul by APL.

4. "Containers: An Idea Whose Time Came Centuries Ago." John H. White, Jr. INTERMODAL AGE, Oct. 1985, pp. 42-44.

   A concise, illuminating article on the development of containers from the Roman Ages to the present. A chronological chart included with a few illustrative examples.

5. "An Early Chapter in Freight Handling, Cincinnati and the Container." John H. White, Jr., QUEEN CITY HERITAGE, v. 43, no. 3, 1985, pp. 25-34.

   An article describing the evolution of containers (beginning in 1917) in Cincinnati area, which proved to be economically feasible.

6. "Intermodal Cars of the Eighties." David G. Casdorph. RAILROAD MODEL CRAFTSMAN, pp. 82-89.

   A detailed overview on the development and current designs of container intermodal cars. Contains clear pictures and helpful charts: capacity comparison table; chronology of intermodal cars; guide to Trailer Train initials.

7. INTERMODAL FREIGHT TRANSPORTATION. John Mahoney. Westport, Connecticut: Eno Foundation for Transportation, Inc., 1985, 214 p.

   Includes all aspects of intermodalism: history, containerization, equipment, etc. Contains useful pictures, charts, glossaries of sources.

8. "Intermodal Progress...From Logs to Logistics." PACIFIC MARITIME MAGAZINE, v. 3, no. 12, June 1986, pp. 14-15.

   Briefly documents the development of intermodalism from 1847 to the present.

INTERMODAL HISTORY

9. "The Magic Box: Genesis of the Container." John H. White, Jr. RAILROAD HISTORY, Bulletin 158, 1988, pp. 73-93.

   A detailed analysis of the evolution of the container, written by an historian. The author also speculates on the role of the ICC.

10. "Next for APL: The 48-Foot Box." Richard Knee. AMERICAN SHIPPER, v. 27, no. 8, August 1985, p. 20.

    Describes the different-sized containers owned by API (40, 45, 48 ft.) and API's plans for investment in domestic containers.

11. "Piggyback Trailers in the Eighties." David G. Casdorph. RAILRAOD MODEL CRAFTSMAN, March 1988, pp. 87-93.

    This article identifies design characteristics of various piggyback models. Equipment terms and identifier codes are explained: trailer operators/builders and fleet facts are outlined.

12. "Railroaders Expect Intermodal Hub Network to Be Complete in Five Years; BN Hubs to Operate as Profit Centers." Roger Schreffler. AMERICAN SHIPPER, v. 24, no. 10, October 1982, pp. 38-41.

    Describes BN's plans for its hub centers to accommodate intermodal activities, which is stressed as being more advantageous economically. Attempts to define "hub" and project the future position of truckers.

13. "Railroads: Rushing To Be Second." Don Cole. CARGO SYSTEMS INTERNATIONAL, Intermodal Supplement, December 1986, pp. 5-9.

    Analyzes the reasons for restraint on the part of the railroads when considering double-stack rail car investment. Points to the confusion regarding the ideal domestic container and equipment/facility limitations.

14. "Railroads to Use Neutral Chassis Pools in Chicago." AMERICAN SHIPPER, v. 27, no. 8, August 1985, p. 20.

    Announcement by BN and Conrail to use neutral chassis pools for double-stack shipments to the Midwest.

15. "Shifting Lines of Responsibility in Intermodalism." Phillip C. Yeager. TRAFFIC WORLD, v. 205, no. 11, March 17, 1986, pp. 47-49.

    The article has an historical slant to intermodalism, explaining how some of the infrastructure developed. Problems with the structure are couched in terms of "shifting lines of responsibility": untrained/unmotivated railroad union employees; cargo liability; shipper vs. third party, etc.

INTERMODAL HISTORY

16. "U.S. Railroads Begin to Understand the Box." Francis E. Phillips. CONTAINERIZATION INTERNATIONAL, v. 18, no. 8, August 1984, pp. 51-55.

An early article on the development of domestic containerization. Hub centers, equipment problems, and design specifications are discussed.

INTERMODAL EQUIPMENT

1. "CEDEX: The Key to Container Tracking." Vincent Grey. CONTAINER NEWS, v. 23, no. 11, November 1988, pp. 20-22.

   Technical advisor to the Technical Advisory Group of the ISO explains CEDEX - Container Equipment Data Exchange - and its role in container logistics. The standard nomenclature is also described.

2. "Container Standards Under Review By ISO." Vincent G. Grey. CONTAINER NEWS, v. 23, no. 8, August 1988, pp. 38-39.

   Traces the development of container standardization and reviews argeements currently up for discussion by the ISO in Europe and U.S./Canada. Makes a case for container bifurcation: unrestricted vs. "captive" (or trade-route-limited).

3. "Countdown Continues for Domestic Tank Containers." INTERNATIONAL AGE, September/October 1988, v. 4, no. 5, pp. 27-31.

   Describes the current state of the domestic tank container industry, which is developing slowly. Emphasis is placed on improvement of support services.

4. "Equipment Key to Intermodal Boom." Robert Roberts. MODERN RAILROADS, v. 39, no. 4, April 1984, pp. 28-34.

   Crane, trailer, car, and intermodal industry developments for 1983 are described in detail. Safety considerations are also mentioned.

5. "Evolving A Domestic Design." P.W. Shahani. CARGO SYSTEMS INTERNATIONAL, Intermodal Supplement, December 1986, pp. 11-13.

   Describes the evolution of the domestic container due to the efforts of the ISO and operators demanding larger capacity and increased strength. Stresses common interface standardization in the face of a diversified market.

6. "Intermodal Equipment/Service Update." Robert Roberts. MODERN RAILROADS, v. 38, no. 7, July 1983, pp. 26-29.

   New (1983) cars and handling equipment developments are detailed. Intermodal traffic volumes are also documented.

7. "Intermodal Handling Equipment Guide." CONTAINER NEWS, v. 23, no. 12, December 1988, pp. 14-25.

   The latest in intermodal handling equipment is described.

INTERMODAL EQUIPMENT

8. "The Hardware Is Here." Robert Roberts. MODERN RAILROADS, v. 37, no. 7, July 1982, pp. 40-47.

Describes new (1982) car developments, arranged by companies emphasizing weight considerations and new sizing. Costs, ride, lift, and load capability, etc., are some of the elements described for each type. A chart is included.

9. "Intermodal Equipment: A Time for Testing." Gus Welty. RAILWAY AGE, v. 184, no. 3, March 1983, pp. 28-31.

Presents all of the emerging (1983) car design considerations and names their manufacturers. Economics and future intermodal trends are considered.

10. "New Equipment to Create New Intermodal Hubs." Roger Schreffler. AMERICAN SHIPPER, v. 24, no. 9, September 1982, pp. 50-60.

New (1982) car designs are described and their drawbacks and advantages are delineated. Analysts predict a trend toward the specific-use car, as opposed to the all-purpose car, which tends to be too heavy. Major manufacturer representatives discuss cost, weight, and logistics involved in new designs.

11. "A New Generation of Cars." RAILWAY AGE, v. 186, no. 9, September 1985, pp. 41-47.

Aluminum is credited as being responsible for much of the new car developments. Mentions High Productivity Integral Trains (HPIT) as the newest innovation.

12. "Safety Testing of Intermodal Hazmat Configurations, Summary Report", G. Kachadoinian. MITRE CORP. NTIS, no. PB88-241815/WTS, March 1988, 138 p.

The report presents summary results of a research program sponsored by the D.O.T. F.R.A. The program was concerned with safety issues of flatcars and the transport of liquid hazardous materials (hazmat) in intermodal configurations. [Abstracted by NTIS]

13. "Supplying Demand for Domestic Containers." INTERMODAL AGE, July/August 1988, v. 4, no. 4, p. 41.

Description of Monon Corporation's approach to the burgeoning domestic container and chassis industry. Emphasis is on quality craftsmanship and adaptation to the market.

INTERMODAL EQUIPMENT

14. "Towards the Ultimate Double-Stack." David McKenzie. CARGO SYSTEMS INTERNATIONAL, v. 13, no. 12, December 1986, pp. 72-74.

    Existing double-stack designs are described in terms of their advantages and shortcomings. The next generation of stack cars is portrayed and suggestions for improvements are given. Emphasis is placed on increased capacity.

15. "Trailers/Containers: Sizing Up Tomorrow's Fleet." Frank Malone. RAILWAY AGE, v. 186, no. 3, March 1985, pp. 42-88.

    Projections for intermodal equipment configurations are given by manufacturer representatives. Domestic container growth is used as a premise for impending specialization and improvements.

16. "U.S. Intermodal Boom Provides New Stimulus to Handling Equipment." Stephen Matthews. CONTAINERIZATION INTERNATIONAL, v. 20, no. 10, October 1986, pp. 73-75.

    Several U.S.-based manufacturers of container handling equipment, and also some outside the U.S. are devoting a good deal of their time and resources to developing equipment especially designed for use at railroad terminals for handling trailer on flatcar (TOFC) and container on flatcar (COFC) services, including double-stack operations. [From U.S. MARAD's MARIBASE]

17. "What's Next in Stack Car Equipment." Bruce Johnson. AMERICAN SHIPPER, v. 29, no. 5, May 1987, pp. 26-28.

    Enumerates the production of Gunderson and Thrall stack cars from 1985-1987. The bulkhead design is explained, along with it's advantages and disadvantages. Road Railer and similar technologies are discussed by the two company representatives.