

FREIGHT CARS

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Aircraft Parts Cars

A Look at the Boeing Fleet

The Wichita - Seattle Pool Equipment

by James Kinkaid

Photos by Author Unless Noted



Burlington Northern 613138 illustrates the essence of this issue: the transport of Boeing airliner parts from Wichita to Seattle. Here, a Boeing 757 "section 41" nose assembly sits at the Santa Fe's North Wichita yard ready for movement. From here it will travel to Kansas City for transfer to the Burlington Northern for the rest of its journey.

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PREFACE

The Boeing fleet is quite unique. While other aircraft manufacturers also utilize rail transport to some degree, none uses the railroads as much as does Boeing. This is an issue that I have wanted to do for quite some time. Since I live in Wichita, Kansas and also work with airplanes, I became quite interested in this fleet early on. Lets take a look at how the rail industry and Boeing cooperate to transport aircraft parts from Wichita, KS to Mukilteo, WA, (Boeing's receiving plant outside of Seattle, WA).

INTRODUCTION

One of the most basic tenants of railroading is the fact that the rail mode is often capable of moving extremely large and bulky items thruout the North American continent without too many problems. True, there are clearances to be met, but many items are quite free to travel the rails nearly at will. Boeing uses this fact to great advantage, inasmuch as many of their loads are considered over-size.

Rail transport in support of aviation has pretty much followed the auto industry: it was used in some fashion since the earliest of times. While rail transport was certainly in use by World War One, World War Two drastically increased the need for rail transport. When America became "the arsenal of democracy," this included aircraft production. Due to the extremely large production runs necessary, few plants could manufacture entire aircraft assemblies in-house, particularly the larger types such as the bombers. Since the subassemblies had to be contracted out, in most cases to other firms all over the United States, rail transport was obviously the preferred method to get these out-sized parts into the main plant.

While this bit of history is not really part of this issue, it does set the stage here. Part of the reason that Boeing was divided up into two greatly separated areas was due to the war effort. After the war, Boeing continued to operate both plants, one at Wichita and the other at Seattle. Wichita generally concentrated on military items while Seattle became the commercial center. However, since Boeing's commercial airliners met with such great success in the market place, a considerable amount of fuselage and other subassembly work had to be sent to Wichita.

Wichita was a natural choice for the subbing out of work: it was easily large enough to do all of the work, and by concentrating the work in-house, it could be more easily controlled. Also, with the introduction of the Boeing 747, floor space was at an all-time premium at Seattle even though a new hanger had been built. Of course, with the move to Wichita of subassembly work, a method had to be made up to get the parts to Seattle.

In essence the movement of rail equipment to support Boeing's efforts in the production of their superb airliners is not really all that much different than that of the automobile industry. True, in numbers Boeing requires but a small percentage of railcars that are required by the auto industry, but the rationale is alike: get items manufactured at outlying plants to the main production plant. For this, Boeing uses a number of railcars which can be placed into two main categories: Boeing owned and Boeing assigned equipment.

To keep the final product costs down as much as possible, the assemblies needed to be as large as possible. Therefore it evolved that aircraft parts to be shipped had to be as large as practicable. Skin assemblies would be as large as interiors of rail equipment permitted. Fuselage assemblies would be in two large pieces, (though Boeing has recently announced that they want to start loading the entire fuselage as one piece). Naturally, specialized rail cars were needed.

BOEING OWNED

Boeing only owns a small percentage of the fleet that it uses to transport aircraft parts. In all cases, these are extremely specialized cars, dedicated to a single item. Boeing had to resort to buying special cars not so much to control their movement but because there was no other equipment available that could be modified for the special mission cars that were needed. Basically, Boeing owns three types of equipment: 747 cars, 767 cars and 777 cars. The 747 and 777 aircraft cars are used to move the fuselage and nose sections between Wichita and Seattle, and their car numbers indicate which type of Boeing airliner they support. Boeing utilizes their 767 cars in other service, and they do not route to Wichita. Most route between Seattle and Stewart, FL, though several run down to Hawthorn, CA.

RAILROAD FURNISHED EQUIPMENT

Both of the major railroads used for the shipments, the ATSF and the BN, contribute cars to the Boeing pool. TTX Company flatcars are also used. Regardless of origin, all cars are in specialized service hauling specific airliner parts and are in assigned service.

The TTMX cars are used for 737 fuselage assemblies. All are fitted with on-purpose aluminum racks, tiedowns and clearance bars for the particular part to be shipped. While TTX furnishes the cars, Boeing installs the above deck members necessary.

The Santa Fe supplies flatcar equipment and several Fe-32 boxcars. The flatcars are also fitted with racks and mounts for specialized items, with both the railroad and Boeing installing the equipment. The boxcars are

equipped with end doors and used infrequently in general parts service. The boxcar fleet has been reduced from six cars to only one or possibly two at present. Most Santa Fe flatcar equipment is of the open flat type, though the railroad does have several cars with hoods.

The Burlington Northern fleet is mostly flatcar equipment which have been modified with hoods. The BN fleet is comprised of both BN cars and former CB&Q, GN and SLSF cars, though all have apparently been repainted since the merger. There are several types of hoods in use. Some are fitted with end doors only while others are equipped with a split type of hood that is designed to be lifted via overhead crane.

All cars, (excepting the Fe-32 boxcars) are cushioned, apparently all with end of car cushioning. Boeing favors the Freightmaster end of car cushioning system for their own cars. A roster is provided of all Boeing Wichita-

Seattle cars circa 1991. Since that time, Boeing has moved some other cars into the Wichita-Seattle pool, including cars that formerly went to such places as Long Island and southern California.

BIBLIOGRAPHY

Boeing 747 cars and drawings, James Kinkaid, *Mainline Modeler*, April 1991
 CB&Q Bomber Boxes and drawings of FM-14 flatcar with hoods, F. Hol Wagner, Jr., *Burlington Bulletin #15*

ACKNOWLEDGMENTS

I would like to express my thanks to the Boeing Company and M.D. McCarter for the use of their photos. I would also like to gratefully express my thanks to Fred Solis, Bill Starmer, Theresa Hebert and Dick Ziegler of the Boeing Company for all of their efforts.

Roster of Boeing-owned equipment, circa April 1995

NUMBER	SERIES	QTY	BLDR	DATE	AAR	PLATE	NOTE
7471	7477	7	TMC STP	1967=70	100FW59-4	C+	747 SERVICE
7478	7481	4	TMC STP	4-79	100FW59-4	C+	747 SERVICE, DIFFERENT CUSHIONING THAN ABOVE
76700	76707	8	TMC STP	7-81	135FWS52-8	F+	767 SERVICE
76708	76710	3	TC CRTS	9-87	131FWS52-8	F+	767 SERVICE
767011	767013	3		1993?	35FW29-6		767 SERVICE
777001	777016	16	GARD STL	5-93	30FW55-1	H+	777 SERVICE



CONVOY! A string of aircraft parts cars hustles thru Ellinor Jct, KS on the way from Wichita, KS to Kansas City, MO on September 9 1990. As is typical, train speeds are high and stops few. The lead car, BN 613139, is carrying a 757 nose section, followed by a skin assembly car. Then there are two flats, (TTMX 80857 followed by ATSF 90096) carrying the fuselage assemblies for another 737 airliner, the worlds most popular jet. Finially, GN 60739 trails, carrying the tail parts for a 737, possibly the one shown in this photo.

Roster of cars in the Boeing Wichita, KS - Seattle, WA pool, circa April 1991

MARK	NUMBERSERVICENOTES	TYPE	AAR	BLDR	BLT	CLASS
ATSF	15909 737	GENERAL FREIGHT, END DOORS	XP4942	ATSF TS	1961	Fe-32
ATSF	15912 737	GENERAL FREIGHT, END DOORS	XP4942	ATSF TS	1961	Fe-32
ATSF	15913 737	GENERAL FREIGHT, END DOORS	XP4942	ATSF TS	1961	Fe-32
ATSF	15914 737	GENERAL FREIGHT, END DOORS	XP4942	ATSF TS	1961	Fe-32
ATSF	15915 737	GENERAL FREIGHT, END DOORS	144XP4942	ATSF TS	5-61	Fe-32
ATSF	15916 737	GENERAL FREIGHT, END DOORS	145XP4942	ATSF TS	6-61	Fe-32
ATSF	90082 737	AFT FUSELAGE, F+	86FMS	ATSF TS	1-60	Fl-17
ATSF	90086 737	AFT FUSELAGE, F+	146FMS53-6	ATSF TS	4-66	Fl-35
ATSF	90088 737	AFT FUSELAGE, F+	114FMS53-6	ATSF TS	1-61	Fl-20
ATSF	90089 737	AFT FUSELAGE, F+	151FMS53-6	ATSF TS	6-66	Fl-35
ATSF	90091 737	AFT FUSELAGE	FMS53-6	ATSF TS	8-66	Fl-35
ATSF	90092 737	AFT FUSELAGE, F+	150FMS53-6	ATSF TS	3-66	Fl-35
ATSF	90093 737	AFT FUSELAGE, F+	151FMS53-6	ATSF TS	4-67	Fl-43
ATSF	90094 737	AFT FUSELAGE, F+	150FMS53-6	ATSF TS	5-67	Fl-43
ATSF	90095 737	AFT FUSELAGE, F+	153FMS53-6	ATSF TS	4-66	Fl-35
ATSF	90096 737	AFT FUSELAGE, F+	153FMS53-6	ATSF TS	4-66	Fl-35
ATSF	90098 737	AFT FUSELAGE, F+	153FMS53-6	ATSF TS	4-66	Fl-35
ATSF	90099 737	AFT FUSELAGE, F+	154FMS53-6	ATSF TS	4-66	Fl-35
ATSF	90319 737	FIN & STAB, F+	144FMS60-0	ATSF TS	10-63	Fl-29
ATSF	91991 737	FORWARD FUSELAGE, F+	188FMS68-0	TMC STP	2-75	Fl-83
ATSF	91992 737	FORWARD FUSELAGE, F+	185FMS68-0	TMC STP	2-75	Fl-83
ATSF	91993 737	FORWARD FUSELAGE, F+	185FMS68-0	TMS STP	2-75	Fl-83
ATSF	91994 737	FORWARD FUSELAGE, F+	185FMS68-0	TMC STP	3-75	Fl-83
ATSF	94428 737	AFT FUSELAGE	FMS53-6	ATSF TS	1966	Fl-35
ATSF	94464 737	AFT FUSELAGE	FMS53-6	ATSF TS	1966	Fl-35
ATSF	94467 737	AFT FUSELAGE	FMS53-6	ATSF TS	1966	Fl-35
ATSF	94508 737	AFT FUSELAGE, F+	150FMS53-6	ATSF TS	3-67	Fl-43
ATSF	94594 737	AFT FUSELAGE, F+	150FMS53-6	ATSF TS	5-67	Fl-43
ATSF	94596 737	AFT FUSELAGE, F+	150FMS53-6	ATSF TS	5-67	Fl-43
ATSF	94612 737	FORWARD FUSELAGE	FMS68-0	TC CH	1967	Fl-88
ATSF	94629 737	FORWARD FUSELAGE	FMS68-0	TC CH	1967	Fl-88
ATSF	94681 737	FORWARD FUSELAGE	FMS68-0	TC CH	1967	Fl-88
ATSF	95009 737	AFT FUSELAGE, F+	150FMS60-0	ATSF TS	10-63	Fl-29
ATSF	95019 737	FIN & STAB, F+	143FMS60-0	ATSF TS	7-66	Fl-29
ATSF	95024 737	FIN & STAB, F+	121FMS60-0	ATSF TS	11-63	Fl-29
ATSF	95025 737	AFT FUSELAGE, GSI CAR, F+	148FMS60-0	ATSF TS	5-56	Fl-7
ATSF	95656 757	SECTION 41 NOSE, CONVERTED WALLBOARD CAR	146FBS48-6	ATSF	2-67	Fl-45
ATSF	95744 757	SECTION 41 NOSE, CONVERTED WALLBOARD CAR	145FBS48-6	ATSF	3-66	Fl-33
BN	610376 747	SECTION 11, F+, EX-GN 60700-60724	113FMS61-6	TC CH	8-68	
BN	610383 767	SECTION 41		EX-GN		
BN	610386 737	FIN & STAB, F+	110FMS61-8	EX-GN		
BN	610394 767	FORWARD ENTRY & SIDE DOOR PANELS				
BN	610396 737	FIN & STAB, F+				
BN	610403 747	SECTION 11				
BN	613138 757	SECTION 41 NOSE, GSI CAR	157FMS61-6	NP		
BN	613139 757	SECTION 41 NOSE, GSI CAR	FMS67-2	NP		
BN	613211 757	SECTION 41 NOSE, GSI CAR	154FMS53-6	NP	1-68	
BN	613238 757	SECTION 41 NOSE	155FMS53-6	NP	1-68	
BN			155FMS53-6	NP	1-68	
BN			154FMS53-6	NP	2-68	

MARK	NUMBERSERVICE NOTES	TYPE	AAR	BLDR	BLT	CLASS
BN	613249 757 SECTION 41 NOSE, GSI CAR	OPEN FLAT	154FMS53-6	NP	2-68	
BN	614033 737 FIN & STAB	OPEN END HIGH CUBE		TC CH, EX GN	10-65	
BN	614204 767 SECTION 41, F+	LIFT HOOD HIGH CUBE	117FMS60-0	TC CH, EX GN		
BN	614211 767 SECTION 41, F+	LIFT HOOD HIGH CUBE	116FMS60-0	TC CH, EX GN	11-65	
BN	614218 747 SECTION 11, FLOORBEAMS, F+	OPEN END HIGH CUBE	110FMS61-6	TC CH, EX GN	11-65	
BN	614219 747 SECTION 11	OPEN END HIGH CUBE		TC CH, EX GN		
BN	614221 767 FORWARD ENTRY & SIDE DOOR PANELS, F+	OPEN END HIGH CUBE	113FMS60-0	TC CH, EX GN		
BN	614232 737 FIN & STAB	OPEN END HIGH CUBE		TC CH, EX GN		
BN	614243 747 SECTION 11, FLOORBEAMS, F+	OPEN END HIGH CUBE	113FMS61-6	TC CH, EX GN	11-65	
BN	614247 747 SECTION 11, FLOORBEAMS	OPEN END HIGH CUBE		TC CH, EX GN		
BN	614250 767 SECTION 41, F+	LIFT HOOD HIGH CUBE	168FMS60-0	TC CH, EX GN	11-65	
BN	614251 747 SECTION 11, FLOORBEAMS, F+	OPEN END HIGH CUBE	161FMS	TC CH, EX GN	11-65	
BN	614252 747 SECTION 11	OPEN END HIGH CUBE		TC CH, EX GN		
BN	614263 767 FORWARD ENTRY & SIDE DOOR PANELS, F+	OPEN END HIGH CUBE	118FMS60-0	TC CH, EX GN	12-65	
BN	614274 747 SECTION 11, F+	OPEN END HIGH CUBE	89FMS61-6	TC CH, EX GN	12-65	
BN	614285 767 FORWARD ENTRY & SIDE DOOR PANELS, F+	OPEN END HIGH CUBE	117FMS60-0	TC CH, EX GN	12-65	
BN	614290 747 SECTION 11, FLOORBEAMS, F+	OPEN END HIGH CUBE	101FMS61-10	TC CH, EX GN	12-65	
BN	614291 767 FORWARD ENTRY & SIDE DOOR PANELS, F+	OPEN END HIGH CUBE	117FMS61-10	TC CH, EX GN	12-65	
BN	630702 737 FIN & STAB, F+	OPEN END HIGH CUBE	81FMS61-6	EX-GN?	5-69	
BN	630703 767 FORWARD ENTRY & SIDE DOOR PANELS	OPEN END HIGH CUBE	FMS61-6	EX-GN?		
BN	630864 767 SECTION 41	LIFT HOOD HIGH CUBE				
BN	630865 767 SECTION 41	LIFT HOOD HIGH CUBE				
GN	60739 737 FIN & STAB, C+, NOTE 1	OPEN END HIGH CUBE				
GN	60740 737 FIN & STAB, C+, NOTE 2	OPEN END HIGH CUBE				
TBCX	7471 747 SECTION 41 NOSE	LIFT HOOD HIGH CUBE	100FMS61-6	TMC STP?	6-69	
TBCX	7472 747 CARGO NOSE DOOR	OPEN END HIGH CUBE	137FMS61-6	TMC STP?	6-69	
TBCX	7473 747 CARGO NOSE DOOR	LIFT HOOD HIGH CUBE	FW59-4	TMC STP	5-67	
TBCX	7474 747 SECTION 41 NOSE	LIFT HOOD HIGH CUBE	FW59-4	TMC STP	2-69	
TBCX	7475 747 SECTION 41 NOSE	LIFT HOOD HIGH CUBE	FW59-4	TMC STP	5-67	
TBCX	7476 747 SECTION 41 NOSE	LIFT HOOD HIGH CUBE	FW59-4	TMC STP	4-69	
TBCX	7477 747 SECTION 41 NOSE	LIFT HOOD HIGH CUBE	FW59-4	TMC STP	4-69	
TBCX	7478 747 CARGO ONLY	LIFT HOOD HIGH CUBE	FW59-4	TMC STP	8-69	
TBCX	7479 747 SECTION 41 NOSE	LIFT HOOD HIGH CUBE	FW59-4	TMC STP	2-70	
TBCX	7480 747 CARGO ONLY	LIFT HOOD HIGH CUBE	FW59-4	TMC STP	4-79	
TBCX	7481 747 SECTION 41 NOSE	LIFT HOOD HIGH CUBE	FW59-4	TMC STP	4-79	
TTMX	80374 737 FORWARD FUSELAGE	LIFT HOOD HIGH CUBE	20FW59-4	TMC STP	4-79	
TTMX	80380 737 FORWARD FUSELAGE	OPEN FLAT	192FMS68-0	BSC JTN	2-70	F68BH
TTMX	80388 737 FORWARD FUSELAGE	OPEN FLAT	192FMS68-0	BSC JTN	2-70	F68BH
TTMX	80453 737 FORWARD FUSELAGE	OPEN FLAT	192FMS68-0	BSC JTN	2-70	F68BH
TTMX	80488 737 FORWARD FUSELAGE	OPEN FLAT	191FMS68-0	BSC JTN	2-70	F68BH
TTMX	80509 737 FORWARD FUSELAGE	OPEN FLAT	192FMS68-0	BSC JTN	2-70	F68BH
TTMX	80647 737 FORWARD FUSELAGE	OPEN FLAT	191FMS68-0	BSC JTN	3-70	F68BH
TTMX	80654 737 FORWARD FUSELAGE	OPEN FLAT	189FMS68-0	BSC JTN	3-71	F68DH
TTMX	80657 737 FORWARD FUSELAGE	OPEN FLAT	188FMS68-0	BSC JTN	3-71	F68DH
TTMX	80660 737 FORWARD FUSELAGE	OPEN FLAT	FMS68-0	BSC JTN	4-71	F68DH
TTMX	80662 737 FORWARD FUSELAGE	OPEN FLAT	189FMS68-0	BSC JTN	4-71	F68DH
TTMX	80857 737 FORWARD FUSELAGE	OPEN FLAT	189FMS68-0	BSC JTN	4-71	F68DH
TTMX	80858 737 FORWARD FUSELAGE	OPEN FLAT	FMS68-0	BSC JTN	12-72	F68DH
TTMX	80858 737 FORWARD FUSELAGE	OPEN FLAT	189FMS68-0	BSC JTN	12-72	F68DH

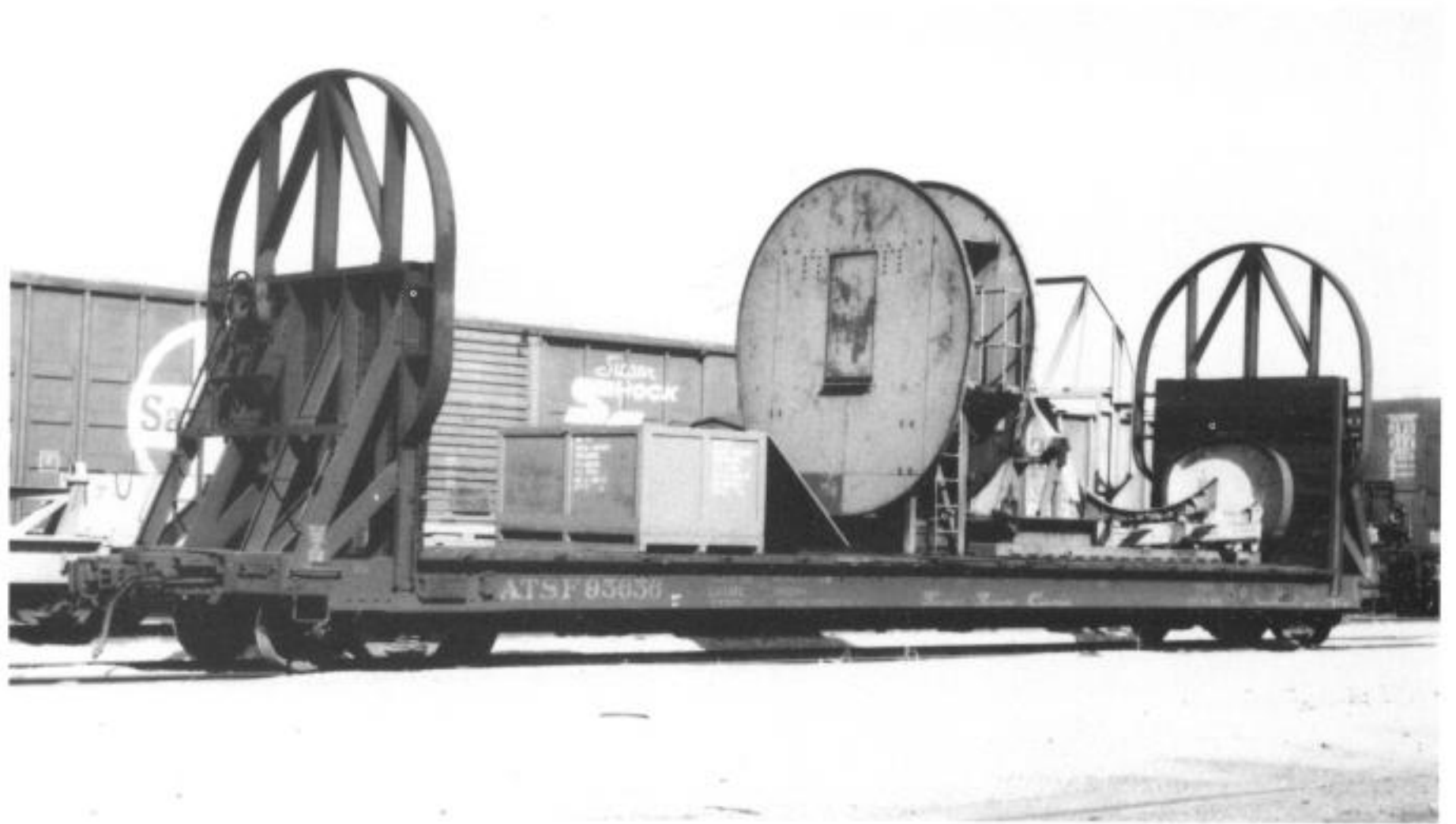
NOTE 1: Marked "Return to LIRR Agent, Farmingdale LI, NY". Hood built by PSF Industries Seattle.
NOTE 2: Hood by Maxson.
This roster is based on a report by The Boeing Company dated 4-16-91. The fleet status and make up change almost daily, but this is a good representation of the Boeing Wichita-Seattle pool fleet.



TOP The TTX Company furnishes a number of cars for Boeing's use. All of the TTMX cars are in service carrying 737 forward fuselage assemblies. Each has been modified in a similar fashion, though individual cars do vary a bit as to particular details. The stack of tarps will be used to wrap the fuselage up for shipment. This helps keep the dust and dirt out of the fuselage since all window openings are void at this stage of manufacture.

BOTTOM BN 613003 is assigned to 757 nose service. Here it shows off the numerous structural members necessary for this service. The small shroud near the far end of the car will be used to blank off the exposed nose bulkhead of the cockpit section. Notice that on this car all of the structural members have been painted green, though most are left in natural aluminum. Wichita, KS 12-25-92.





TOP ATSF 95656 is a converted Ft-45 wallboard bulkhead flat assigned to 757 service. As such it carries the nose section. Several such conversions were carried out by the Santa Fe including some excable reel cars. Notice that on this car the lining on the bulkheads has been kept in place, while the clearance superstructure has been at-

tached to it. Wichita, March 30 1991 **BOTTOM** This Santa Fe Ft-43 is in 737 aft fuselage service. Besides the end structural pieces, cars in this particular service have "A" frame supports near the car middle to help cradle the fuselage.





TOP Boeing owns 11 cars of this type, with this particular car the last of the series. In the *Official Railway Equipment Registers* the cars are split into two groups, with differing overall dimensions. This is due to the different Freightmaster end of car cushioning systems employed. Built by The Maxson Company at St. Paul, MN they are in 747 nose service.

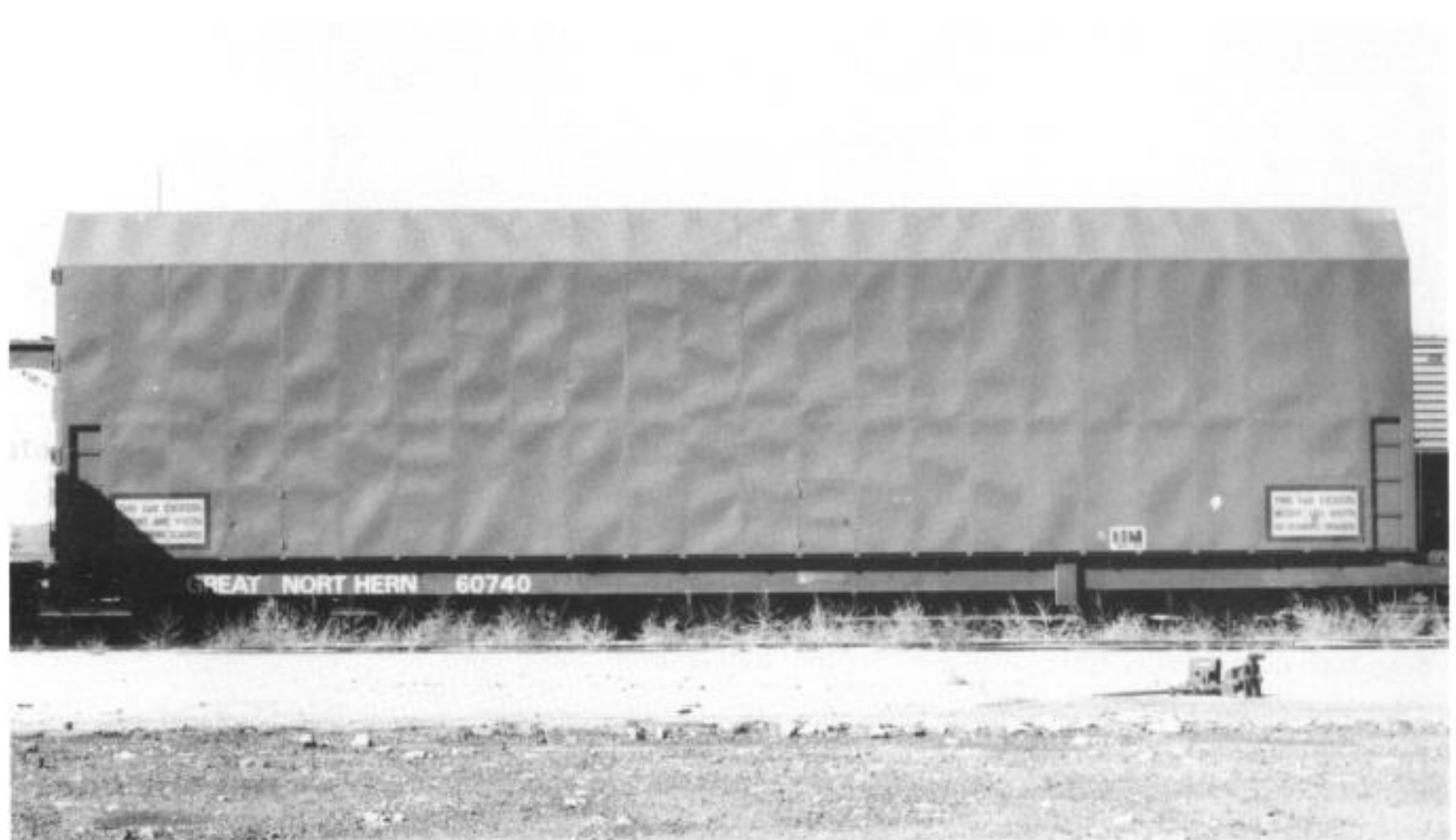
BOTTOM Another Boeing-owned car is this well flat assigned to 777 service. This car was brand new when its photo was taken at the Santa Fe North Wichita yard in May 1993. So new, in fact, that it had not been to Boeing yet for inside bracket installation. While Chamberlain Gard built the car, (at the St. Louis Refrigerator shops in St. Louis) Boeing was still responsible for furnishing the fittings to secure the loads.





TOP Prior to the Burlington Northern the Great Northern contributed cars to the Boeing pool, (as did both the Frisco and the Burlington). Here GN 60739, though very dirty, shows of the rather unique hood arrangement. Most of the end loading cars employed more "arch" in the hood, resulting in a greater sloped area.

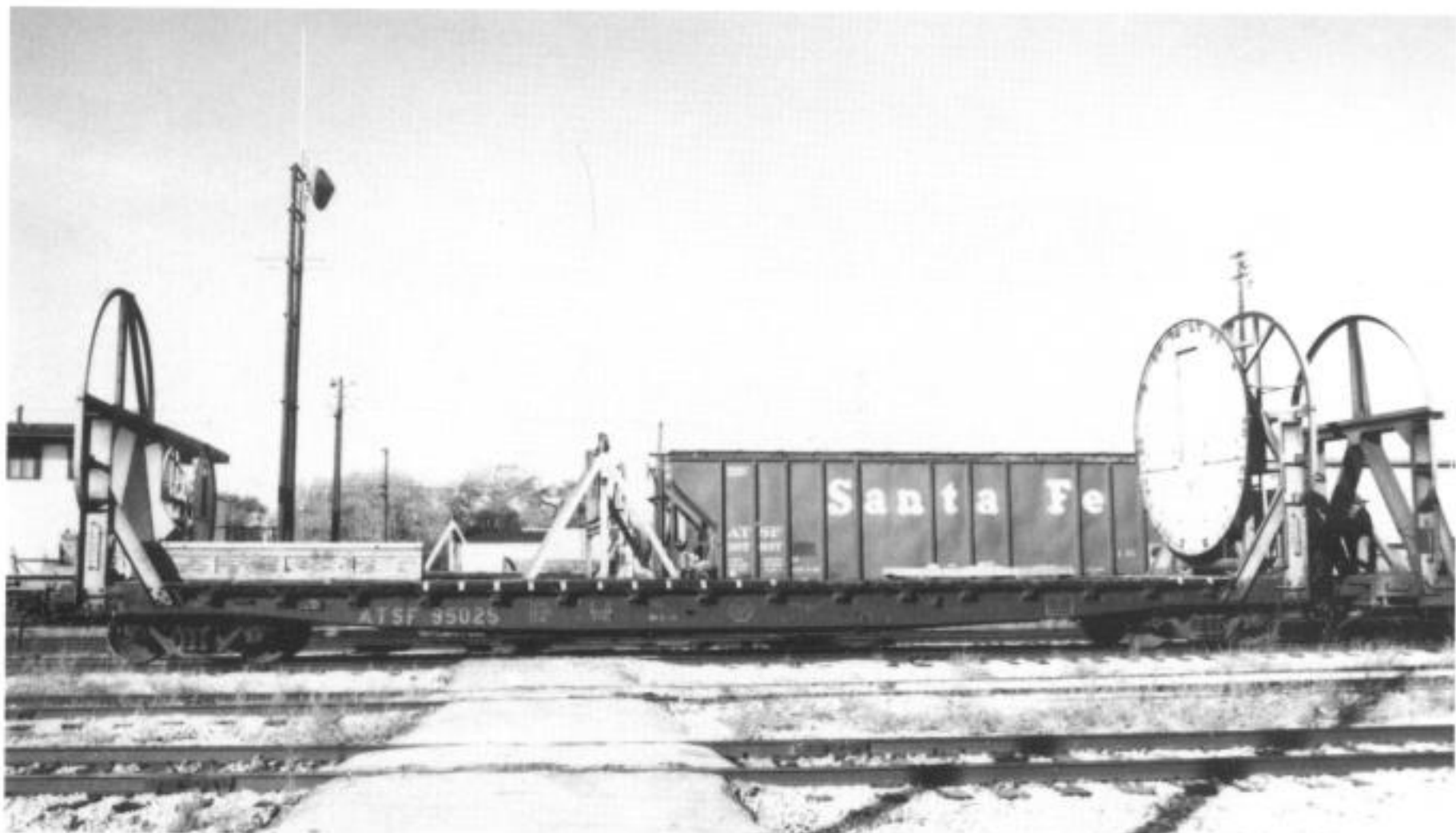
BOTTOM While both cars on this page are end-loaders, this one has a Maxson version of the hood design. Both of these cars were in 737 service hauling fin and stabilizer sub-assemblies from Wichita to Seattle.

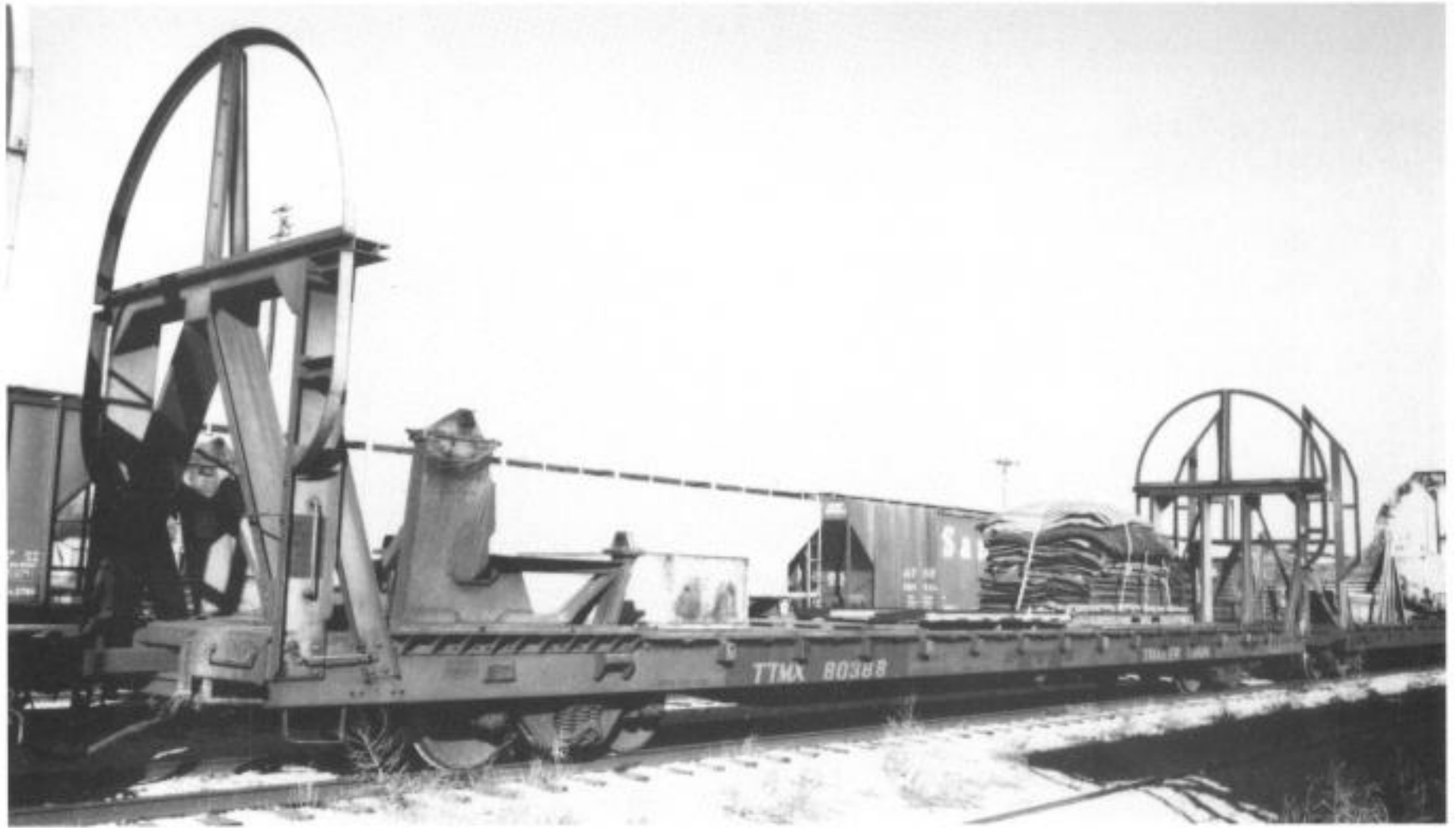




TOP Burlington Northern 610399 features a rather odd shaped roof outline. Several cars feature this design, which is an end-loading arrangement. This car is not in the roster as it was not listed as being in the Wichita-Seattle pool in 1991, (though it was found in the Santa Fe's North yard on June 2 1991). This car's assignment is unknown at present, though I speculate that it is in fin and stabilizer service.

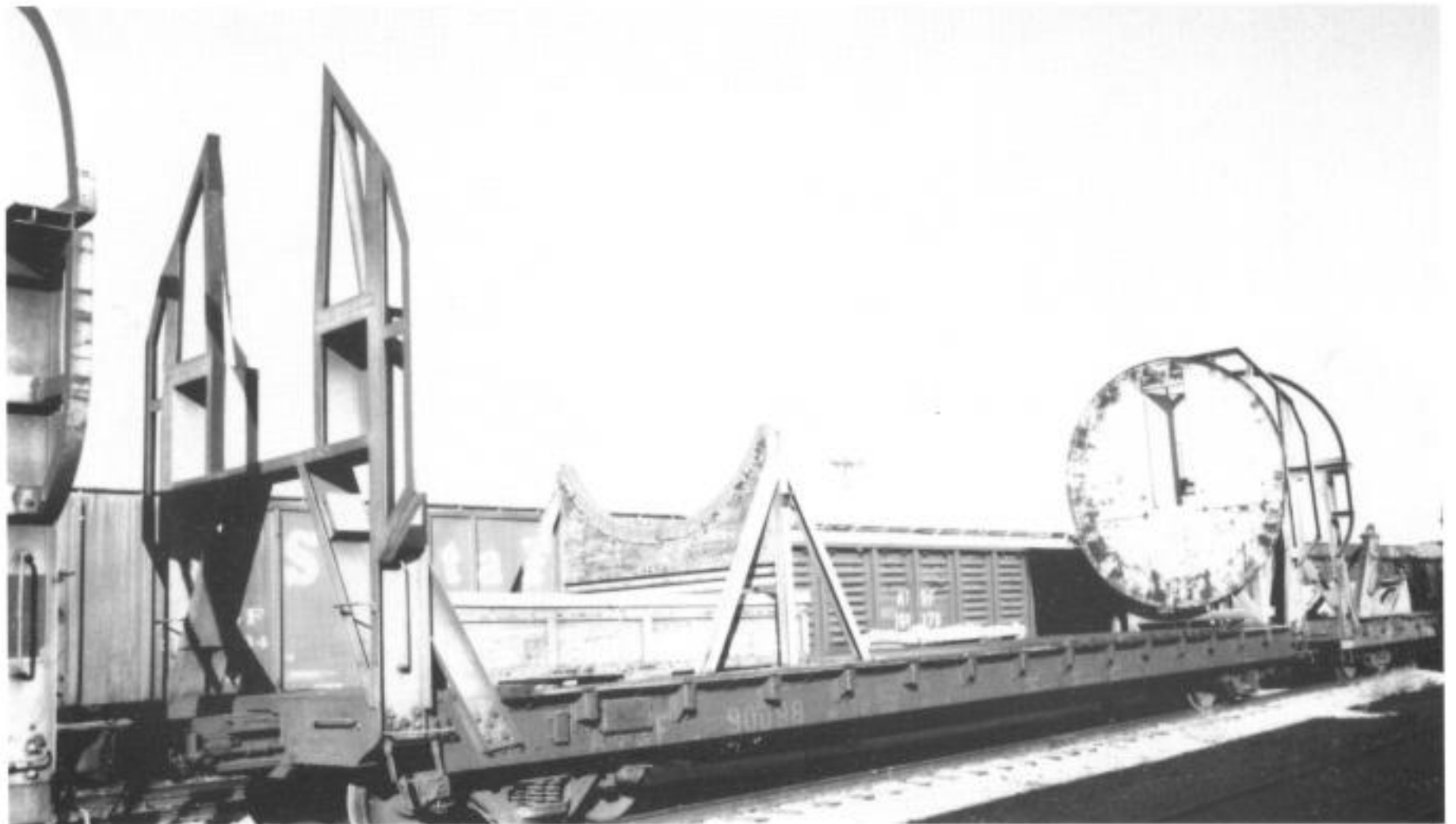
BOTTOM ATSF 95025 is a General Steel Industries cast flat from the Santa Fe's Ft-7 series. It is listed in the roster as in 737 aft fuselage service. Notice that the left-hand bulkhead is not split for the rear end of the fuselage. This is because this car is long enough to handle the assembly as-is, (see page 11 bottom for the other type of 737 aft fuselage bracket design.)





TOP Another view of a TTMX car is this one of 80388. This view gives a good look at the structural elements of the clearance bars along with the main supports fastened to the car itself. Notice that the channels are bolted to the car frame, not welded. This is due to the fact that the channels are aluminum while the car sides are steel.

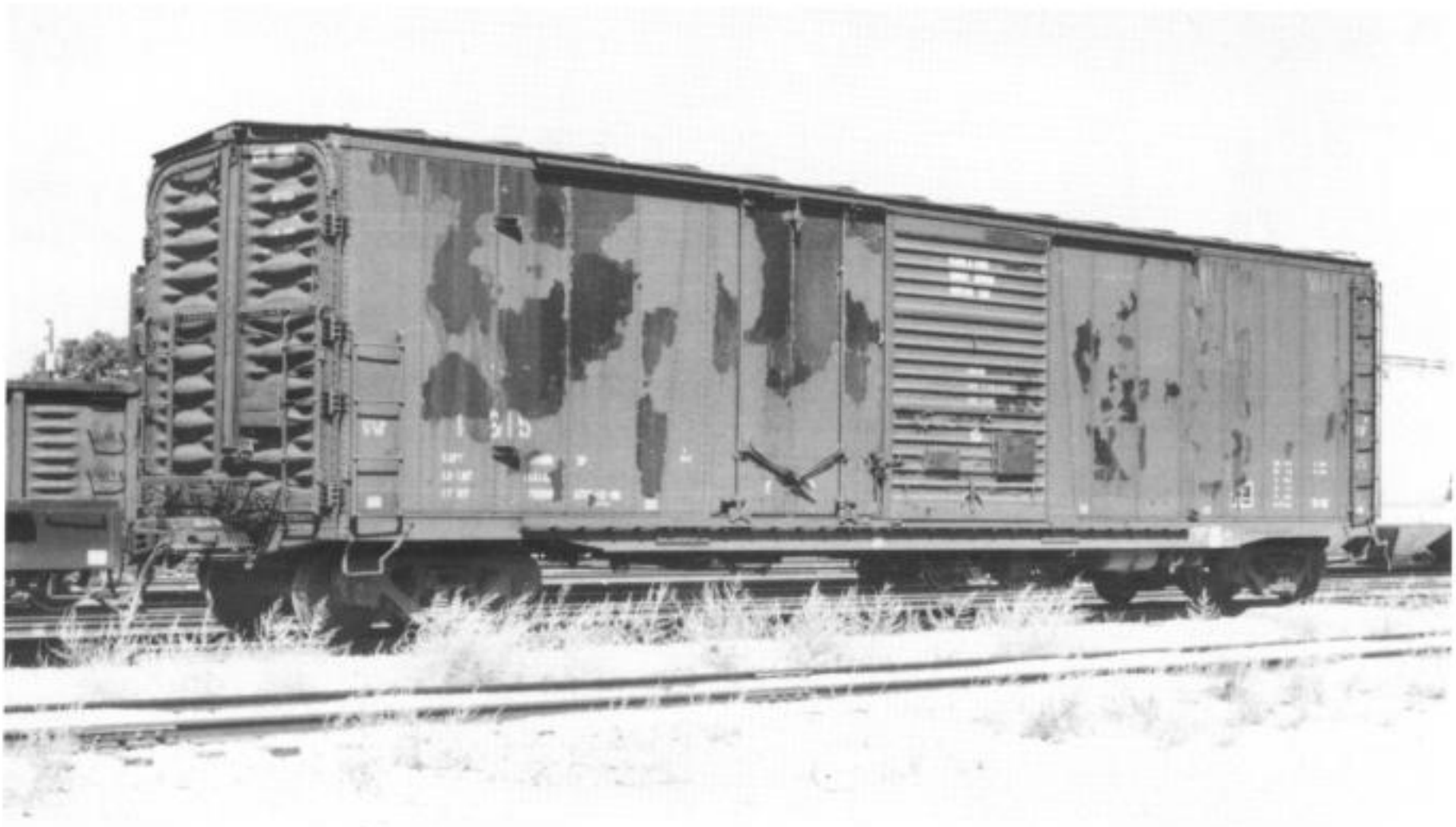
BOTTOM This photo of Santa Fe 90098 was taken on the same day in 1990 as the one above. This car is in 737 aft fuselage service. This is readily indicated by the dovetail design on the near bulkhead. Because the fuselage is a bit too long for the car, it protrudes past the car end bulkhead by a little bit, though not enough to require an idler car.





TOP Burlington Northern 610396 represents the "normal" high cube end loader design. This car is in 737 fin and stabilizer service. Hoods for the various cars were supplied by companies such as Thrall, Maxson and PSF Industries of Seattle. This particular car was spotted at the Santa Fe North yard on March 19 1991.

BOTTOM Santa Fe 15915 has certainly looked better than this! One of the few boxcars in Boeing service, it utilizes the unusual end doors for F.A.K., (Freight **All Kinds**) loading in support of the 737 series. Built at the Topeka Shops in 1961 it is rarely utilized, and will probably be stricken from the roster soon.

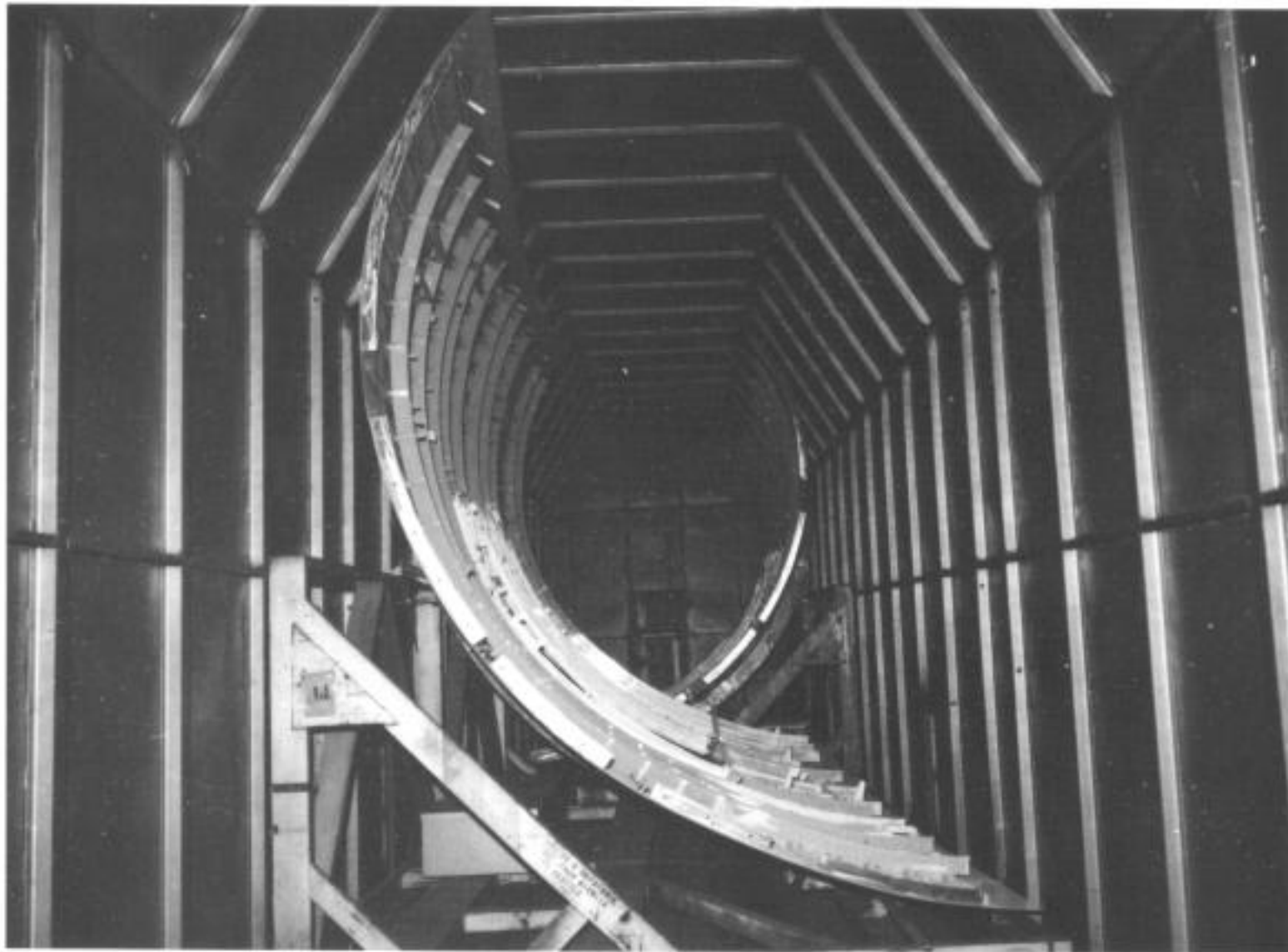




TOP Texas and Pacific 818098 sits at Council Bluffs, IA on April 8 1988. This car is also in Boeing service, though not in the Wichita-Seattle pool. It was built by Thrall in 1968 as job 439 and is part of the series 818096-818099. The "LTV" on the lower left side stands for one of the smaller aircraft manufacturers, Ling-Temco-Vought. LTV did sub-assembly work for Boeing, (and McDonnell Douglas) and provided

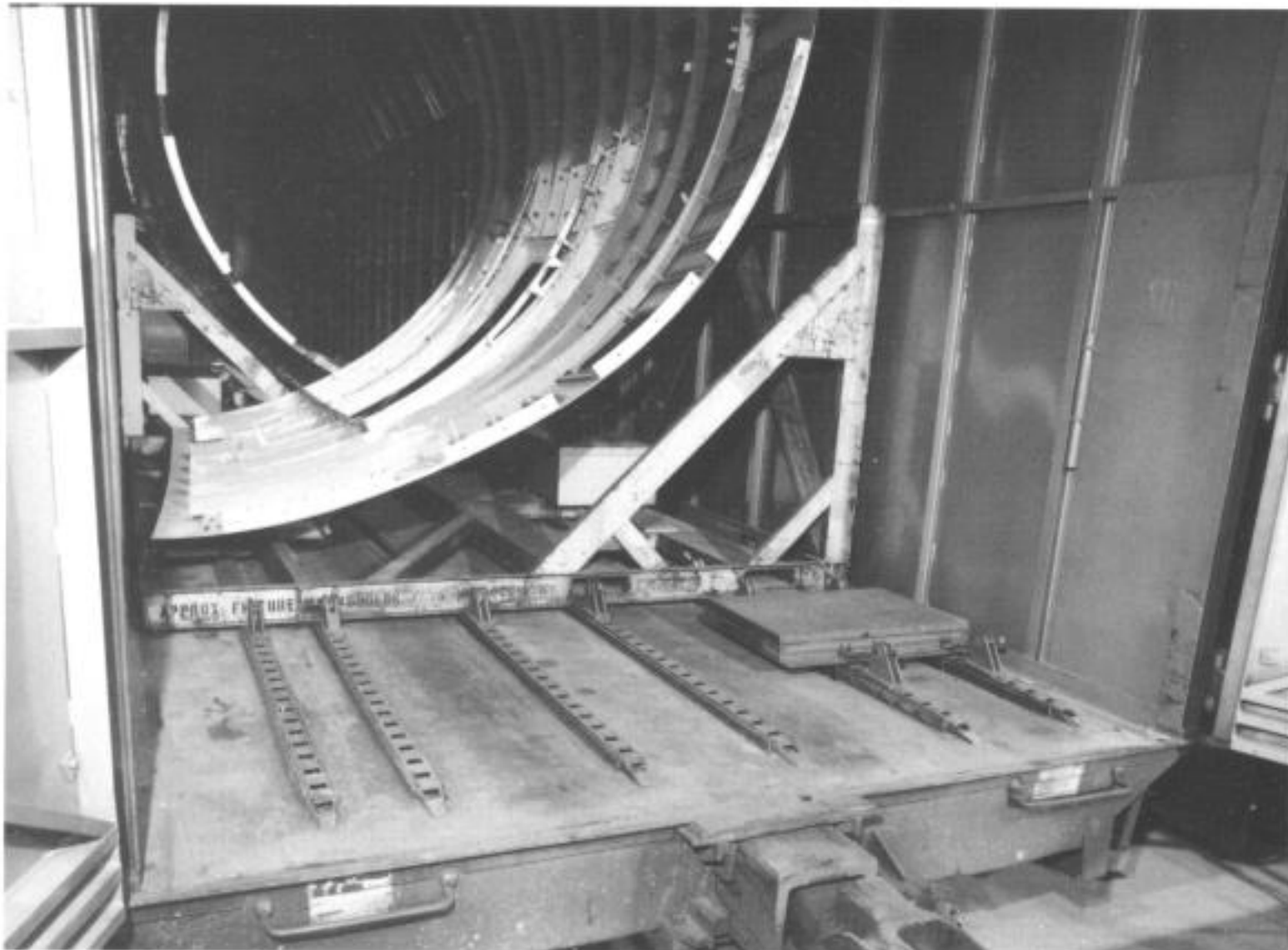
747 parts. Note the oddly shaped protrusion on the end door. *photo courtesy M.D. McCarter* **BOTTOM** Wide open, one of the end-loader cars awaits its next load. For all of these cars' size and capability, actual load weights seldom reach above ten tons, most of which is the loading pallets. *photo courtesy The Boeing Company*

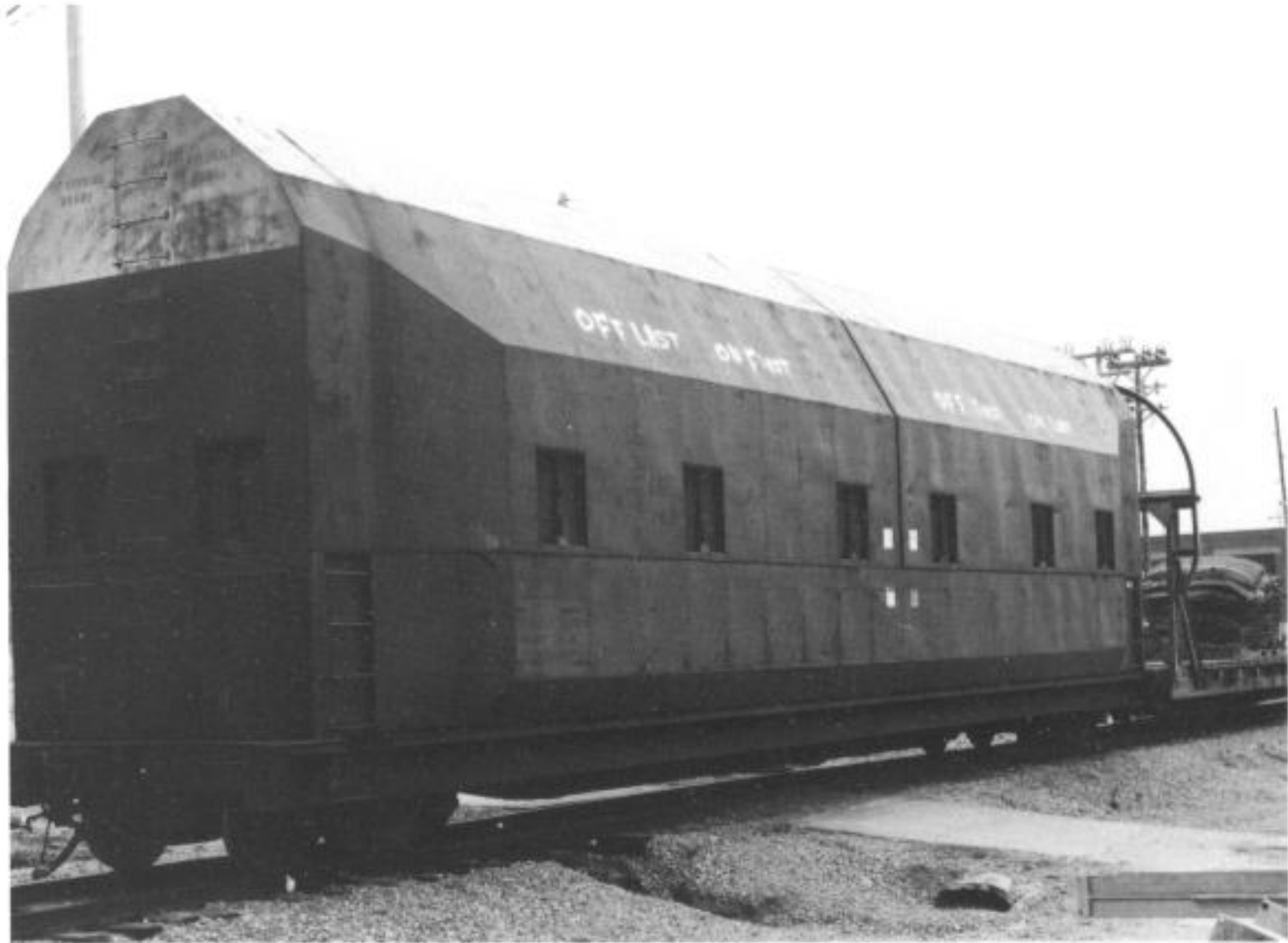




TOP This interior view gives us a close look at how the skin assemblies are actually loaded. Pre-positioned on pallets, they are forklifted into place then secured. The actual car is unknown, but likely one of the BN cars in forward entry and side door panel service. *photo courtesy The Boeing Company* **BOTTOM** This detail view of another skin assembly car gives us a look at how the pallets are secured. After

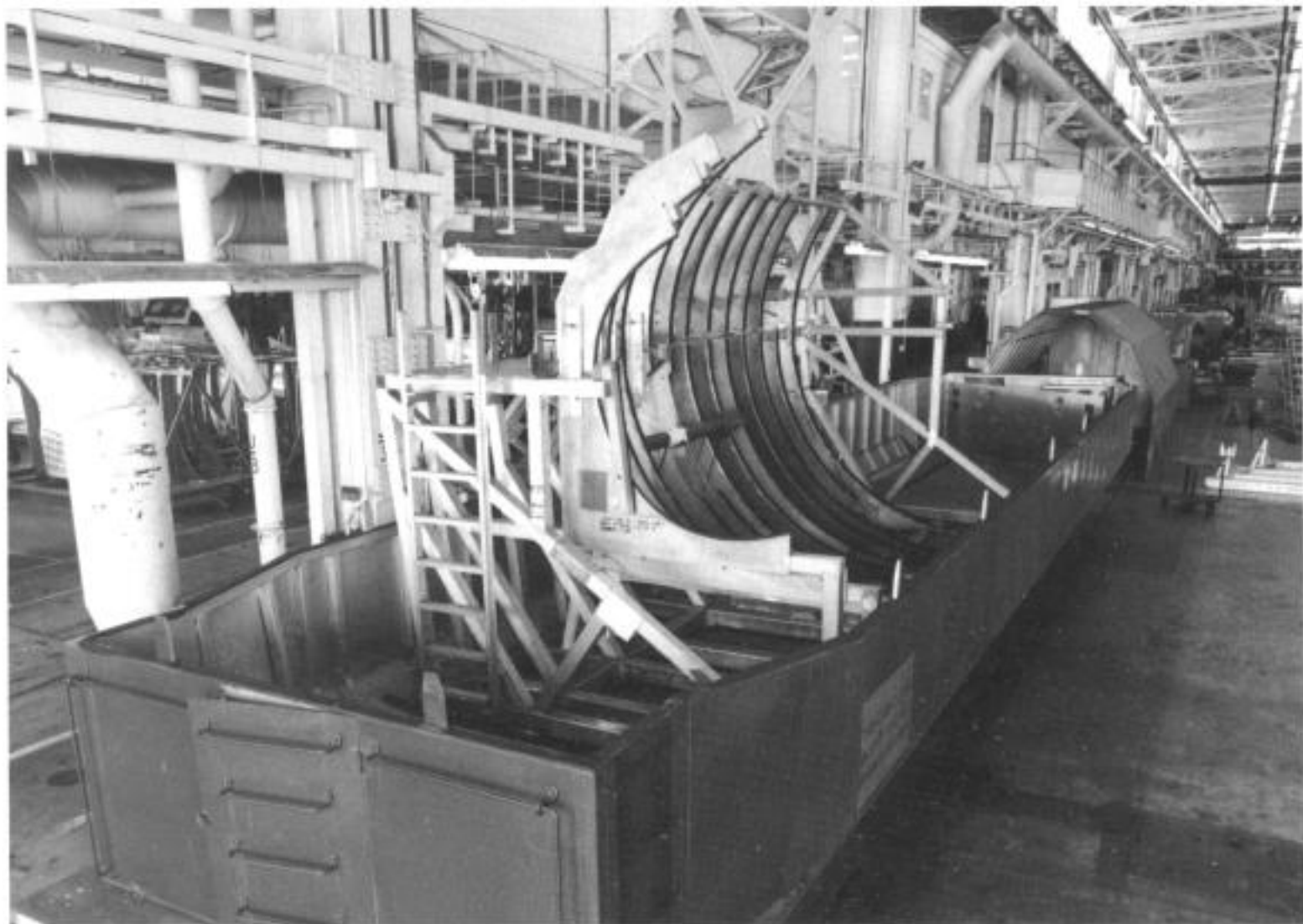
positioning, they are nudged into place. Drop-in brackets are then set into the track slots, then adjustable bolts are wrenched down to secure the pallet. The square piece in the right hand side position has an unknown function, though it is probably used to place the impact recorder, commonly used by Boeing to monitor loads. *photo courtesy The Boeing Company*





TOP Though very dirty, this photo of BN 614204 illustrates nicely the odd looking hood arrangement. The square cutouts along the sides of the lift off sections of the hoods house tiedown turnbuckles. Because the hoods are designed to locate at a particular position, and one end hood always incorporates a "rain gutter" trough at the middle gap, the crude stenciling instructions for lifting are necessary. *photo courtesy The Boeing Company*

BOTTOM Another interesting view showing one of the high cube lift hood cars being loaded at Wichita. In the background can be seen one of the hoods. Notice the extreme double-arch design of the cover. Boeing's plants are equipped with overhead gantry cranes, making for easy loading and unloading operations. *photo courtesy The Boeing Company*





TOP Although not in the Wichita pool, these two cars are also a part of the Boeing fleet. Here TBCX 76707 is captured at the Burlington Northern's North Kansas City yard on September 16 1990. Built by The Maxson Company, this car is unique in that it is a well type flat with sliding hoods. The hoods split open at the center and move to the car ends. Most of these cars are used between Seattle and Stewart, FL. *photo courtesy M. D. McCarter*

BOTTOM Boeing's 76710, shown here at Lincoln, NE on December 17 1988, is quite similar to the car shown above. However this car was built by Thrall at Cartersville, GA. Looking closely one can discern a number of minor details in the car body design. Although this car was built in September 1987, the hood shows a new date of July 1981, indicating that the hood has been swapped at some point. *photo courtesy M.D. McCarter*

