

SMRHS Fleet Distribution

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August 13, 2013

The car type distribution proposed in this paper was adopted by the Prototypical Operations Committee on August 13, 2013. The items under “Next Steps” were not approved.

Since I have an interest in the prototypical make up of the freight car fleet, I have followed on-line discussions and published commentary on this topic. There is some general agreement along with aggressive opposition to developing a model railroad fleet based upon the distributions in the national fleet. Consequently, I proposed following the data reflected in the 1949 Car Builder’s Cyclopedia when the SMRHS began to build its fleet of freight cars for Proto Ops.

Currently, it is time to re-think this strategy for developing a freight fleet more tailored to our location, local character, and industrial needs. And even though this could be considered an academic exercise, having a clear direction is needed if we plan to ask for SMRHS resources in further developing the fleet. For example, we may choose to expand the fleet with new boxcars, gondolas, and ice reefers lettered for Sierra Central RR.

Fleet Character

Since the Car Builder’s Cyclopedia included numbers for all the cars, including those for all railroads and those in private holdings such as tank cars and reefers, and the 1949 date seemed close to our era, it was a logical choice. Some modifications were made to reduce for hoppers since there aren’t many coal hoppers in the West and increase for reefers since agriculture is big. Lately, better information on the fleet distribution of individual railroads has come to my attention.

The following table has the distributions of the national fleet as found in NMRA’s Post War Fleet and various railroads from Tony Thompsons’ books on SP Freight cars:

Freight Car Distribution								
Car Type (AAR Code)	National %	WP %	SP %	ATSF %	GN %	DRGW %	RI %	PRR %
Box cars+ Autobox (XM + XA)	36.4	43	57	54	54	37	66	33
Hoppers + Covered (HM + LO + LT)	27.1	22	3	7	26	1.5	3	34
Gondolas (GS+)	16.5	18	20	18	8	47.5	18	29
Tanks (TM + TA)	7.1	0	4	6	0	0	0	0
Refrigerators (RS + RM)	6.7	0	0	0	0	0	1	0
Flat cars (FM + FB)	3.5	15	10	3	6	2	6	2
Stock (SM)	2.7	1	4	11	5	11	5	1
Caboose (CE)	--	1	1	1	1	1	1	1

Notice how several western railroads, namely the WP, SP, GN, and the ATSF have boxcars greater than the national average and most have at least 54%. Gondolas for the WP, SP, and ATSF are a bit above the national average at 18-20%. Flatcars for the ATSF are near the national average but for the SP and WP, flatcars are represented much higher at 10-15%.

Number of cars in individual railroad fleets from 1950:

	Fleet Size							
	National #	WP* #	SP + T&NO #	ATSF #	NYC #	MILW #	RI #	PRR #
Number of cars	2,055,383	15,000	35,763	35,764	67,608	31,547	??	64,432

*Estimated at 15,000 cars.

Refrigerator Cars

Determining the proportion of refrigerator cars on a railroad is problematic because most reefers were not the property of specific railroads but held by other companies. Further complications arise when you consider that specific commodities were restricted to certain reefer fleets. For example, SFRD, FGEX, and PFE were almost exclusively produce (fruit and vegetables) whereas the others shipped meat along with beer, butter, eggs, etc.

Reefer Fleets for 12-31-1946			
Owner	Number of Cars	Main Commodity*	Percent of Total
PFE	37,124	Produce	27
FGEX Consortium	22,762	Produce	17
MDT (NRC, LRX)	15,746	Meat	12
SFRD	14,678	Produce	11
ART	11,995	Meat	9
GATC/SRLX	7,053	Meat	5
WRTX	6,332	Meat	5
ARLX	4,254	Meat	3
NWX	3,526	Meat	2
NADX	2,457	Meat	2
All others+	9,831	Produce + Meat	7
Total RR + Private	135,758	Produce + Meat	100

* Assumption for type of commodity. +Assumed to correct totals.
Information on owner and fleet size from Thompson's PFE book.

If the assumptions hold true, produce reefers for PFE, FGEX, and SFRD makeup about 55% of all reefers. Conversely, the remaining 45% would carry meat and other products.

Here is a "What if?" game to help estimate the proportion of produce reefers for a western agricultural area such as that modeled on the Sierra Central by the SMRHS. Figure about 50% of all the cars owned by the western roads (SP, WP, ATSF) are present in the west. And since at least 50% of the cars in a home road train and on the home road facilities are home road cars, estimate about 50% of SP, WP, and ATSF cars in the west to be filled with foreign road cars. Lastly, estimate about 50% of the PFE and SFRD fleet to be present in the west. PFE was selected because of its association with the SP and WP. SFRD was selected because of its association with the ATSF.

Possible Reefer Distribution			
Owner/ RR	Number of Cars	Cars in West (50%)	Percent of Total (%)
PFE	37,124	18,562	16.5
SFRD	14,678	7,339	6.5
SP & T&NO	35,763	17,881	16
ATSF	35,764	17,882	16
WP *	15,000	7,500	6.5
Foreign Cars for SP (50%)	-	17,881	16
Foreign Cars for ATSF (50%)	-	17,882	16
Foreign Cars for WP (50%)	-	7,500	6.5
Total	-	112,427	100

*Estimated at 15,000 cars.

If this strategy were followed, roughly 23% of the cars in western agricultural areas would be produce reefers. Meat reefers would add to this but would likely follow the national average. If we populated the permanent fleet to match this What if? game, the layout would be very orange.

Boxcars and Autoboxes

From Thompson's books on SP boxcars and autoboxes, comes the following analysis for 1950. There were about 28,515 boxcars and about 7,895 autoboxes. This is about 78% boxes to 22% autoboxes.

Hoppers and Covered Hoppers

From Thompson's books on SP and Richard Hendrickson's books on the ATSF, I have these rough numbers on hoppers and covered hoppers. For each, I have totaled the open top twin, triple, and quad hoppers (HM) the short covered hoppers (LO); and the longer covered hoppers (LT) that the railroads rostered in 1960. For the other freight cars, I have tried to be consistent with 1949/50 but for the hoppers, I extended the dates to 1960 as the railroads added many of the LOs and most of the LTs during this time.

As of 1960, the SP had about 8106 hoppers of HM, LO, and LT classes with 48% HM, 36% LO and 16% LT. Also in 1960, the ATSF had no more than 8180 hoppers in these same classes with 48% HM, 39% LO, and 13% LT.

Proposed SMRHS Freight Car Fleet

The composition of the permanent freight car fleet for Proto Ops should address the following: 1) the industries and clients that the Sierra Central RR serves; 2) the fleet characteristics of the western railroads the Sierra Central attempts to mimic; and 3) the overhead and through traffic typical for the era and the location. For the online industries, the waybill currently in use can serve as a guide the types of cars most needed. Fleet characteristics may be discerned by looking at the WP, SP, and to some extent, the ATSF, the GN, SN, and CCT. Train types such as single commodity unit trains common in the 1950s can also be used to build a fleet.

Car Type (AAR Code)	T Grover Audit		Proposal (Schott)		Railroads, 1950			
	Waybills (#)	Waybills (%)	Cars (#)	Cars (%)	SP %	WP %	ATSF %	GN %
Box cars (XM @ 80%)	162	50.0	168	42.0	57	43	54	54
Autobox (XA @ 20%)	19	5.9	44	11.0				
Hoppers, twin, trip, quad (HM)	9 (HM+HT)	2.8	8	2.0	3	22	7	26
Covered Hoppers, short (LO)	18	5.6	8	2.0				
Covered Hoppers, long (LT)	4	1.2	6	1.5				
Gondolas (GS+)	12	3.7	24	6.0	20	18	18	8
Tanks- Chemical/Food (TA)	0	0.0	6	1.5	4	0	6	0
Tanks- Petroleum (TM)	26	8.0	30	7.5				
Refrigerators- Produce (RS)	26	8.0	48	12.0	0	0	0	0
Refrigerators- Meat (RM)	0	0.0	10	2.5				
Flat cars- General (FM)	35	10.8	32	8.0	10	15	3	6
Flat cars- Bulkhead (FB)	4	1.2	8	2.0				
Stock (SM)	9	2.8	8	2.0	4	1	11	5
Caboose (CE)	--	--	--	--	1	1	1	1
Total	324	100	400	100				

Note:

- 1) The proposed percentages will be slightly lower than the western roads as we are including tank cars and refrigerator cars in our count even though these cars were privately held in reality.
- 2) The waybill system should be reviewed as it is not always a good indicator of what the on-line industries need. For example, there are 18 covered hoppers (LO) on the layout and each has a waybill. Only 1 or 2 go to Newport Soap loaded with borax in West Oakland and all the others go to interchanges. Interchanges are convenient "Industries" as they take all cars and all loads but provide a rather dodgy rationalization for on-line client needs.
- 3) Our fleet also seems high on open hoppers (HM, previously HT). Currently, we don't have the industry spots to justify the number of hoppers especially the ones loaded with coal.
- 4) The number of boxcars should be increased to be consistent with most western railroads and also by the waybills (T Grover). This proposal approximates an overall 53% (41%+11%) composition with an 80% boxcar (XM) and 20% autobox (XA) split similar to the SP.
- 5) According to western produce fleets common to agricultural areas, produce reefers (RS) are underrepresented. However, online industries cannot accommodate a larger reefer fleet. An argument can be made for including a reefer unit train as part of Proto Ops.

- 6) Meat reefers (RM) may be over represented on the layout. It is hard to estimate the quantity of meat reefers that should be present but it is probably less than 2.5%. However, if 45% of the national reefer fleet belongs to meat, then 3% is about correct. In the West, I would expect the meat reefers to be eclipsed by the produce reefers.
- 7) For flatcars (FM+FB), our fleet is about dead on to both the waybills and the western railroad percentages. However, our industries favor more FB cars.
- 8) For tank cars (TM+TA), our fleet is just a bit high both the waybills and the national percentage. Since we have a few on-line industries that take both petroleum and chemical tanks including a loading facility, we should explore the volume of tank traffic on the Cal P. We can use more chemical/food product cars (TA) in the fleet.
- 9) The waybills do not justify increasing the number of gondolas (GS) but all western railroads had a higher percentage than we field. The western roads had gondolas ranging between 18% and 20% but we can hardly justify 6%.
- 10) The quantities, not the percentages, are based upon a project fleet of 400 cars. This total should be examined as the optimal size may be a little less or substantially more. Please see revised Traffic & Capacity Worksheet.

Next Steps

Since beginning Proto Ops at SMRHS, we have made do with what the membership lent to the freight car fleet and what was in the CORE collection. Recently, we have refined our vision of the permanent fleet by removing the modern equipment and focusing on the 1950s era. This proposal seeks to fine tune the fleet to more closely reflect on-line industry needs and character of the western railroads we have chosen to mimic. With the adoption of this proposal for car type distribution in the freight fleet, we should pursue direct action including:

- 1) Promote a Sierra Central RR presence by obtaining equipment lettered for the Sierra Central. The initial installment would be: 12 boxcars, 5 gondolas, 4 acid and chemical tank cars, and 5 caboose. Candidate cars could be purchased from manufacturers and swap meets or obtained from members or the existing SMRHS CORE fleet. Clinics would be given to refurbish the cars including stripping, detailing, painting, decaling, and weathering. Custom decals would have to be designed and purchased.
- 2) Develop a reefer train to emphasize the importance of California agriculture.

Operations would be developed for priority handling the eastbound, loaded reefers. One possibility would be for the waybills to indicate a priority move. The train could primarily consist of a dedicated block of reefers that are pre-staged. During the session, this partial train receives additional loaded reefers at 12th Street Yard, at Oroville, and at Keddie before moving into staging. Other possibilities exist and should be discussed.

- 3) Develop a mail train to enhance the non-freight component of operations. Obtain or refurbish 4 baggage cars and 2 RPOs into Sierra Central livery. Suggest Pullman green with deluxe lettering and black roofs. Custom decals would have to be designed and purchased.

Operations would be developed for mail service including inserting express boxcars and reefers at Oakland Pier and setting out RPOs and mail storage cars in Oroville and Sacramento.