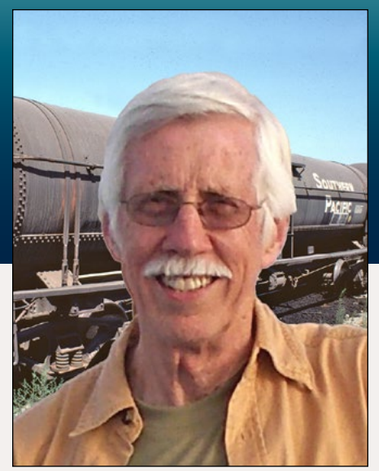


Pacific Fruit Express, Part One

Delivering perishables across the nation

Reader Feedback (click here)

Getting Real column

by Tony Thompson

PFE: Operations of a nationwide system

Pacific Fruit Express, or PFE, was in its day the largest perishable transportation company in the world. It had the largest fleet of refrigerator cars (nearly double its nearest competitor), the largest ice plants, and the highest rate of car utilization in North America. Its history is complex and interesting, and I only address it briefly here, as background for modeling.

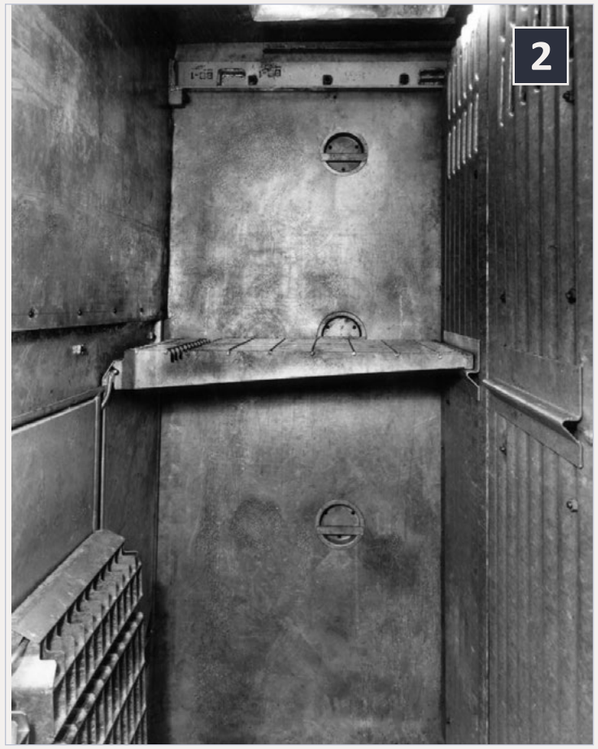
Many readers may know, there is a very complete book about the company and its operations, *Pacific Fruit Express* (2nd edition), by A.W. Thompson, R.J. Church, and B.H. Jones, Signature Press, 2000. I'll refer to it as "the PFE book." It's 472 pages, with 744 photographs, complete rosters, and even color chips. But it does not address modeling.

There are several aspects to modeling PFE, and the PFE book is simply not organized with a modeling perspective. Information about operations is spread throughout the book, which is why I will summarize it here. The book contains considerable history

of PFE cars, but again, nothing directly on modeling. I will remedy that in this column.

For many modelers, refrigerator cars are the main thing to be modeled about PFE, and there are good, commercial models in several scales for major PFE car classes (I will restrict myself to HO in this column). I'll discuss the major classes, along with opportunities to model some of the non-major PFE classes.

1: The car cleanout track at Roseville in November 1962, showing a freshly unblocked drain at left discharging meltwater, and body ice being pulled out of cars (this was ice that had been placed within the original load). Note the broom on a clip on the open door. The men are repacking a journal. The cars are pretty dirty in this view because it dates from well after the cessation of PFE car washing. –PFE photo, author's collection.



2: An interior view of an ice bunker, looking toward the car side, with one of the grates raised to the half-stage level. These grates could be set at half- height in the bunker so only a half-load of ice is used. At top is an ice hatch opening. – "Dick" Whittington photo for PFE, courtesy California State Railroad Museum (CSRM).

Modelers in every corner of the country can and should include PFE reefers among their freight cars.

Not only can the cars modeled, operations can also be modeled, whether it's perishable loading locations in the far west, movement of blocks of cars across the country, or cars arriving at destinations throughout the North America. Understanding the kinds of operation conducted by a company like PFE is essential to successfully modeling the operations side. A significant part of this is the icing of cars in transit. I will include some brief notes on modeling icing facilities.

Many procedures and features of PFE operations were shared by the Santa Fe's Refrigeration Department (SFRD), Fruit Growers Express (FGE), American Refrigerator Transit (ART) and others. But because I know the details best for PFE, I will concentrate on it.

I will limit my discussion to a single era, my own modeling period of 1953. I hope by describing the way I have approached

the topic, and the kinds of resources I have exploited, will clarify how a similar approach could be taken for any era.

The Car Fleet

When PFE began in 1906, it purchased 6600 new refrigerator cars. Immediately it became the largest single fleet in the country of such cars under railroad control (Armour Car Lines had the only larger fleet at that time). By 1910, PFE exceeded Armour, becoming the largest reefer fleet of any kind, a distinction it maintained throughout the life of PFE. Until 1978 it was a jointly-owned property of SP and UP. During the mid-20th century, the PFE fleet hovered around 40,000 cars. Specifics of various PFE car classes are included in the modeling section.

3: This photo is obviously posed, with the workmen static rather than active, but it clearly shows the two traditional ice tools used throughout PFE territory: one's forged steel with two prongs, called a "bi-dent," probably by analogy with "trident," and the other is a wood-handled tool for moving ice, having both a point and a hook, called a "pickaroon." The small movable bridge hooks on the drop-down apron. Note the color of the hatch plug. – PFE photo, Rob Evans collection.

4: This is Pocatello, Idaho in January 1948. Pocatello had an Ice Manufacturing Plant, and this photo illustrates what a large PFE facility looked like. The 85-car island ice deck extends almost to the vanishing point in the distance (in 1960 it would be extended to 105 carlengths). It has typical PFE drop-down aprons and is roofed. At left are PFE cleanout tracks and repair facilities. – PFE photo, courtesy CSRM.

Operations

It is useful to summarize how PFE operated its fleet. In some ways it was quite different from most railcar operation, and probably not familiar to modelers. When PFE cars were unloaded, anywhere in the country, PFE wanted them back during most of the year, because harvesting was continuing in the western growing areas. Thus PFE had agents in all major eastern cities to keep track of the whereabouts of cars, and to stay in contact with yard-masters and car distributors to ensure that empty PFE cars were promptly directed westward.


5

5: A workman uses a pick-aroon to manhandle ice out of an ice service car onto the chain which takes it up onto the ice deck at Hinkle, Oregon. – PFE photo, courtesy CSRM.

As soon as cars arrived on Union Pacific or Southern Pacific trackage, they were sent to cleaning facilities like North Platte, Nebraska, or Tucson, Arizona, and then on to PFE shops like Nampa, Idaho, and Roseville, or Los Angeles California. This is an important detail, because it means that after nearly every loaded trip, a PFE car passed through a PFE facility on its return.

In addition to keeping cars in tip-top mechanical condition and making sure they were clean and suitable for loading, this process also meant that projects to repair, upgrade, or repaint PFE cars were carried out efficiently and rapidly. This is a major difference from free-running cars (box cars, gondolas), which might roam throughout North America for months or years without returning to home rails.


6

6: This superb photo by Jim Morley at Roseville shows men actively handling ice. The 300-pound blocks on the deck are being split into quarters. The man on the apron is called the "passer," and he uses a pickaroon to move quarter blocks over a bridge, to the man working at the hatch. With the bident, the "chopper" at the hatch chops the ice to the needed size. – Author's collection.

There was also a difference from most types of cars, for which cleanliness was not important, such as coal hoppers. PFE strongly believed that carrying food products made cleanliness essential to customer service. Until the 1950s, PFE actually washed its cars.

Once cars were inspected, cleaned, and repaired as needed, a complex dance began to get the right number of needed cars to the right areas. Since it would take from a few to several days to move cars to a particular harvest area, careful figuring had to be done on just how many cars were needed at each location, and when. Local PFE agents worked closely with major growers, agricultural agents, and weather people to try and predict harvest activity a week or more in advance.

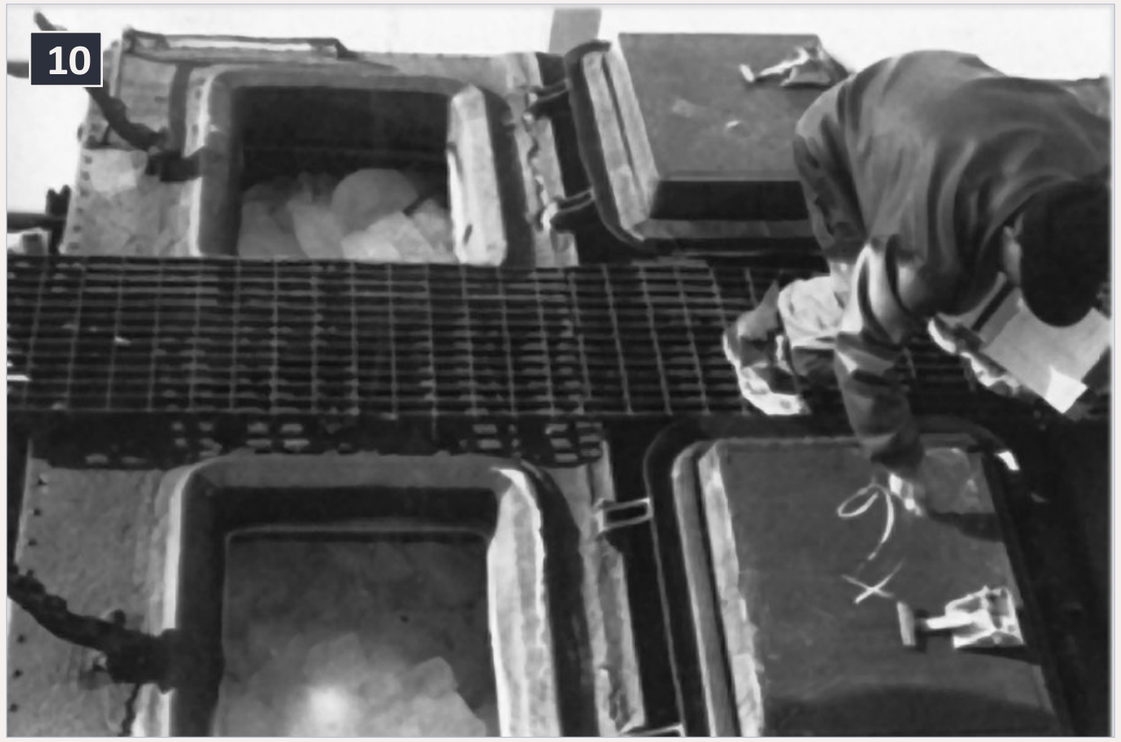
Pacific Fruit Express, of course, did not move any cars to harvest areas itself. The SP, UP and WP did that. But PFE directed movement of those empties, with prior

7: In this photo, the typical two-man crews are doing much the same job as in the Morley photo, though in this case with a steel car of Class R-40-23. –PFE photo, courtesy CSRM

8: Another superb photo at Roseville, showing the icing process from above. All the classic components are here, from the ice tools to the deck apron and ice bridge. Note also the hatch plugs, and the latch hooks on the plug bottoms. – PFE photo, courtesy CSRM.

arrangement for yard space wherever needed to make sure the car supply would be there.

At peak harvest times in August, September and into October, even PFE's enormous fleet of some 40,000 cars was not enough. Under agreements with other refrigerator car owners, PFE would borrow extensively from the fleets of American Refrigerator Transit (ART), Merchants Despatch (MDT), Fruit Growers Express (FGE), and others, to achieve a sufficient car



9-10: These two photos at Ogden in 1962 illustrate part of the icing process. At left, a workman is opening ice hatches, and at right the estimator chalks an amount of ice needed to top off the bunker (in hundredweights) on the hatch plug. The same amount would be noted on the clipboard in his left hand for that car number. This chalking operation is for the operator of the icing machine moving along the deck. Chalking was not needed in the days of icing with hand tools. –both photos, PFE, courtesy CSRM.

supply. Conductor's time books have shown that up to 24% of all empty reefers moving for loading could be foreign, that is, non-PFE cars, during peak season.

It was up to shippers to request the exact car needs for the next day or two, but a reservoir of cars had to be available so that these cars could be supplied. That was PFE's job, to get enough cars to the needed area in time to fulfill those requests.

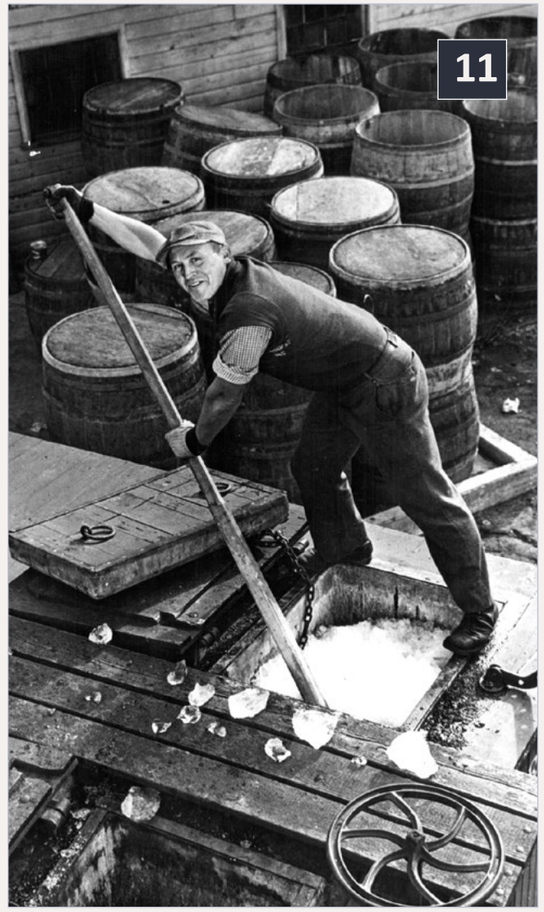
For most crops, it was vital to remove "field heat" from the harvest. This means both the physical heat from sun and warm air, and also the biological heat from continuing life processes in the fruit or vegetable. Removing the heat slows down ripening and suppresses decay mechanisms during shipment. Shippers might have pre-cooling facilities for their produce, so it would be cool when loaded, or they might rely on getting the cargo cooled en-route by ice in the car bunkers.

It was up to the shipper to choose how they wanted the cars set up for Protective Services, as the tariff term was. They could choose (and pay) to have a car pre-iced, with ice bunkers filled with ice prior to spotting the car for loading. This would ensure a cool car interior, and would hasten the en-route cooling. Or they could simply have an un-iced empty spotted at their dock. For shippers that had their own precooling facilities for produce, there was less need for pre-icing.

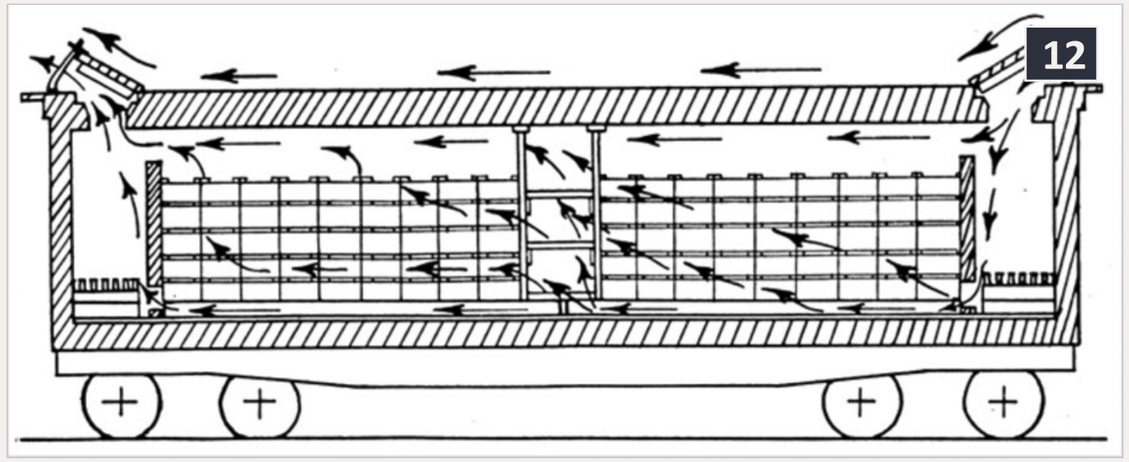
Note the tariff language: cars are pre-iced, and loads are precooled, not the other way around.

Then any loaded car was normally fully iced after being picked up by the local freight. This was called "initial icing." Whether any salt would be added to the ice, to hasten melting and increase heat absorption, was up to the shipper, for an additional fee.

The shipper also chose how the in-transit icing was to be conducted, for example to fill the bunkers every 24 hours, or to fill them at predetermined



11: This workman is "barring" the ice in the bunker. Ice size appears to be "crushed." This is a Union Refrigerator Transit (URTX) car. Note the separate hatch plug, of canvas-covered wood construction, lying atop the hatch cover. – Arnold Menke collection.



12: This SP diagram shows air flow through a car set up for ventilation service. Note that the load does not reach to the car ceiling, to help with air flow, and that dunnage at the car center will allow easier unloading. – Author's collection.

locations only, or any other of a variety arrangements. In cooler weather, when less ice would be consumed, stage icing could be chosen. This meant setting ice grates at half height in the bunker, so that filling to the top with ice would leave the bottom half of the bunker empty (see Figure 2). This maintained good air circulation, while allowing all cars to be re-iced the same way: filling the bunkers to the top.

At an icing deck, foremen would go down the string of cars, opening ice hatches and estimating by eye the amount of ice needed to fill the bunker to the top. They noted this on a clipboard as they went from car to car. The ice usage for each car was charged to the freight bill for the car. Occasionally the ICC would conduct a field test, checking how accurate these foreman's estimates were, and they were usually found to be quite accurate.

The process would continue all the way to the car's destination. Many cars were directed to eastern or midwestern

wholesale produce markets, with the expectation that local buyers would purchase the cargoes at that market. But many cars left the shipper's dock without a final destination. Fluctuating prices from city to city meant that last-minute choice of the best market could pay off.

Such cars might be waybilled to a railroad agent at an intermediate city, or to a broker in such a city, with the expectation that a final destination could be chosen while the car was en route. The "diversion" information would be telegraphed to that intermediate agent or broker in time to redirect the car. PFE allowed up to three diversions per car without charge.

13: This builder's photo of a Class R-40-23 car with ice hatches latched open clearly shows the one-piece design of plug and cover, along with the latching hook underneath the plug which permitted locking hatches from inside (mostly to prevent transients from riding in empty cars). – American Car & Foundry Company photo for PFE, courtesy CSRM.

Once the cars were unloaded, of course, the cycle began again, with PFE agents rounding-up cars and getting them moving westward again.

Icing

Modelers naturally find reefer icing an interesting topic,

14: This ice hatch is latched as far open as it can go (note top of latch bar), for ventilation service. The hatch plug underneath is separately hinged, thus is at a slightly different angle. – PFE photo, courtesy CSRM.

and modeling an ice deck provides additional operating activity as well as being visually interesting. The PFE side of this is complex because of the size of PFE's territory, encompassing all the lines of SP (and T&NO), UP and WP. All icing on those lines was PFE's responsibility, and facilities had to be provided.

It is understandable that modelers might like to model one of the big Ice Manufacturing Plants or IMP (as PFE called them), these were truly impressive facilities. A word of caution though: because these were usually mammoth in size (see Figure 4). The PFE IMP at Roseville, CA was the largest

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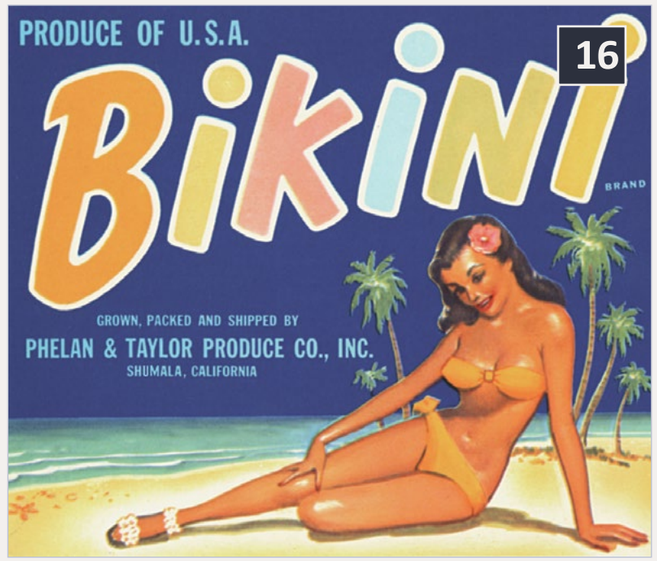
artificial ice plant in the world in its day. In a number of places where mainline trains were iced in transit, such as Roseville and Ogden, PFE operated 110-car island decks, meaning a 110-car train could be spotted on each side of the deck for icing. Even a 20-car deck, fairly small in PFE terms, would be 880 feet long, or more than 10 feet long in HO scale, pretty large for most layouts.

Luckily for modelers, there were much smaller and more numerous icing facilities, called Ice Transfer Plants or ITP, where PFE did not manufacture ice. This might mean that a commercial ice company made the ice, Union Ice Company is an example throughout much of California. This might mean that the facility had only an ice storage house, and ice had to be brought in, usually by rail.

15: An illustration of loading orange crates into a PFE car, using a hand truck. Note that crates are not loaded to full car height, to assist air circulation, and that crate dimensions permit stacking so that no crosswise dunnage is needed. Standard interior dimensions of PFE cars were vital to shippers. – "Dick" Whittington photo for PFE, courtesy CSRM.



16: This packing box label features an attractive young woman. Masculine-oriented themes were commonplace on packing labels. This actual Phelan & Taylor label has been modified for a packing house on my layout at Shumala. – Author's collection.

At an ITP using commercial ice, the ice deck part of the plant might be owned and manned by employees of the commercial ice company; it might be built and maintained by PFE but manned by the local ice company; or in some cases, PFE both built the deck and employed the deck workers, while using commercial ice. There were also ITP facilities entirely owned by PFE, such as Watsonville Junction, where ice was brought-in to an ice storage house.

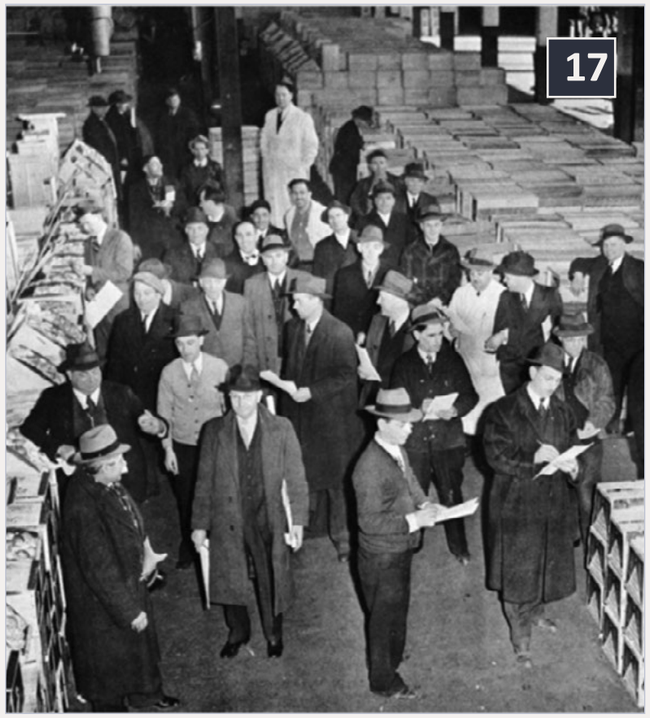
The icing process normally utilized large ice blocks, the PFE standard being 300-pound. But these were not dropped directly into ice bunkers. Instead, they were split into quarters and then chopped to final size by workers on the deck. There were three final sizes specified in the tariff: chunk, coarse, and crushed. For reefer icing, these sizes had the following definitions. Chunk ice was defined as not more than 75 pounds per piece (a quarter of a standard block), coarse ice was 10 to 20 pounds, about the size of a melon, and crushed ice meant pieces the size of a man's fist. Shippers would choose the ice size they wanted.

Modelers sometimes depict 300-pound blocks being placed directly in bunkers. This was not done, for two reasons. First, the ratio of surface area to volume of the ice was not very great, slowing melting and heat absorption. Second, such a large weight being dropped ten feet onto the ice grates at the bottom of the bunker would easily damage the grates.

Once the ice had been placed in the bunkers, a workman would "bar" the ice. They would jam a long steel or wood bar down through the mass of ice, to make sure no major void spaces are in the ice. Obviously, void spaces were more likely in the larger ice sizes. The process is shown in Figure 11.

Ventilation

During certain times of the year, particularly spring and fall, outside temperatures might not be too high. Even in summer, there are cool spells, or shipments routed through cooler areas. In that case, ice refrigeration might be unnecessary, although cooling



17: Buyers at a wholesale produce market, Chicago, 1952. It was these men at whom the label art on produce boxes was aimed, not housewives in grocery stores. The example in Figure 16 illustrates the kind of image in question. – courtesy CSRM.

with the external air would be desirable. For that situation, the tariff provided for ventilation instead of icing.

Ventilation involved opening the ice hatches and latching them in a raised position, allowing air to flow through the car while it was moving. The idea is shown by the diagram in Figure 12. Normally no ice would be placed in the bunkers of a car in vent service, although the tariff did have a category for combined service.

It is important to recognize how ice hatches in vent service looked. The hatch plug was usually visible, as was of some of its thickness. This can be seen in several of the accompanying photos. Older cars had separate plugs and covers, as can be seen in both the Figures 11 and 14

On the earliest cars, they were entirely separate, with the plug attached only by a chain. They were closed by setting them into the opening by hand. The hatch cover was primarily a weather cover, and was hinged. In later years the plugs remained separate, and were separately hinged to ensure alignment with the hatch opening. Then when steel ice hatch covers came into use, usually the plug was built onto the bottom of the cover, making a one-piece part Figure 13. This matters in modeling older cars versus newer cars, as the appearance of the plugs will be different.

I feel obliged to point out that there is a modeler's and railfans' legend that cars with the ice hatches latched open were always empty, being dried out in transit to loading areas. It is quite true that ice reefers were pretty damp inside most of the time, but no PFE employee I talked to had ever heard of drying out empties. No one would have bothered, because they would promptly get damp again with ice refrigeration. But in hot

Table 1: The U.S. Department of Agriculture table of desirable transit temperatures for produce. This was part of an extensive 1961 handbook on produce handling, shipping and marketing, USDA Handbook 195.

Desirable transit temperatures for certain fresh fruits and vegetables

Fruits	Desirable transit temperature	Vegetables	Desirable transit temperature
	°F.		°F.
Apples	32–40	Artichokes	32
Apricots	32	Asparagus	32–36
Avocados:		Beans (snap)	45
Most varieties	45	Beets (bunched)	32
West Indian varieties	55	Broccoli	32
Bananas (green)	56–60	Brussels sprouts	32
Cherries (sweet)	32	Cabbage	32
Cranberries	36–40	Cantaloup	35–40
Dates	40–50	Carrots	32
Figs (fresh)	32	Cauliflower	32
Grapefruit	50–60	Celery	32
Grapes (Vinifera)	32	Corn (sweet)	32
Lemons	50–55	Cucumbers	45–50
Limes	48–50	Eggplant	45–50
Oranges:		Endive and escarole	32
Ariz. and Calif	40–44	Honeydew melon	45–50
Fla. and Tex.	32–40	Lettuce	32
Peaches and nectarines	32–45	Onions (dry)	32–40
Pears	45–55 / 32	Peas (green)	32
Pineapples:		Peppers (sweet)	45–50
Mature green	50–55	Potatoes:	
Ripe	45	Early crop	50–60
Plums (including fresh prunes)	32–45	Late crop	40–50
Strawberries	32	For chipping:	
Tangerines:		Early crop	65–70
Calif	36–45	Late crop	50–60
Fla	38	Radishes	32
		Spinach	32
		Sweetpotatoes	55–60
		Tomatoes:	
		Mature green	55–65
		Pink	45–50

weather, empties being delivered sometimes had hatches open to vent any heated air from the car.

So, in general, cars with hatches positioned this way were probably loads, and the cars were in ventilation service. Vent service is an interesting variation on the appearance of refrigerator cars, and properly understood brings variation in operating patterns. To know which crops might ship properly at higher temperatures, Table 1 is a U.S. Department of Agriculture listing of desirable shipping temperatures for a variety of produce.

It immediately recognized that there is a considerable range of temperatures. On any given day, different cargoes might have different needs for protective services.

The harvest season for each perishable fruit or vegetable differs by geographical location. An extensive table of these seasons in Southern Pacific territory is included as an appendix in the PFE book. Those choosing to model specific seasons or months can use this information for operational planning.

Modelers may not necessarily be interested in what is supposed to be inside their model freight cars, but if they are, produce certainly is one category of loads which can have quite different requirements at different locations and seasons.

Finally, I should mention a point that I know has puzzled some modelers. This is the question of why many packing box labels seemed to have themes appealing to men, rather than to the women who traditionally did the household shopping in that era. The answer, of course, is that the housewives rarely saw an entire packing box. Only the male (in those days) grocer's buyers saw the boxes, Figure 17.

In Part Two we will explore the modeling of a PFE fleet. ☑

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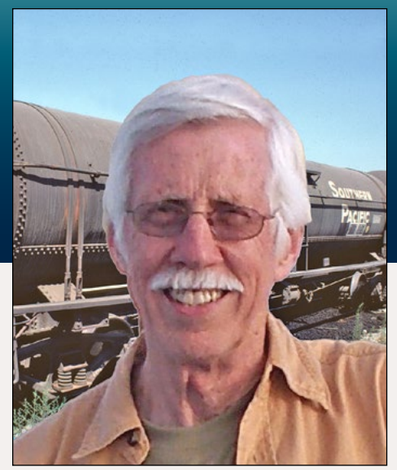


Modeling PFE cars

Pacific Fruit Express, part two

Reader Feedback (click here)

Getting Real column

by Tony Thompson

PFE paint schemes, car classes, and more

In Part One of my column on modeling Pacific Fruit Express, I addressed prototype facilities and how they operated. This month I describe modeling PFE cars and accompanying facilities. Because of the size of the PFE fleet, modeling a thorough representation of it is a large challenge, but for those wishing to have just a few PFE cars, the fleet size is an advantage in some ways, as it permits flexibility in choices of car classes to model.

Naturally one can simply model by "targets of opportunity," and just take PFE cars that are handy, as kits or ready-to-run. Alternatively, one can choose to be systematic. One such approach to choices of PFE cars to model is to choose some proportion of the entire fleet to model. That is what I am doing.

To illustrate how this might work, I include Table 2, showing the PFE car fleet as listed in the January 1953 issue of the Official Railway Equipment Register, or ORER. I show each number group for the PFE fleet, and how many cars were in it at

Table 2
PFE Car Fleet, January 1953

Number Group	No. of Cars	Class	Year (re)built	Model Car Fleets, basis: one per 1000	one per 3000	my fleet
2001–5000	2985	R-40-25	1949–50	3	1	3
5001–8000	2961	R-40-23	1947	3	1	3
8001–10000	1997	R-40-26	1951–52	2	1	2
13220–15919	474	R-30-11	1917–18	0	0	0
15920–36473	159	R-30-12, -13	1920–26	0	0	0
38563–39062	471	R-40-4	1930	0	0	0
40001–44700	4559	R-40-10	1936–37	5	2	4
44701–45700	979	R-40-14	1941	1	0	1
45701–46702	987	R-40-20	1945	1	0	1
46703–48702	1982	R-40-23	1947	2	1	4
50001–52775	see text	none	1939–40	see text on "Western Pacific cars"		
60001–62500	2437	R-30/40-18*	1942–43	2	1	2
62501–63500	976†	R-30/40-19*	1944–45	1	0	1
63501–65920	2362†	R-30/40-21*	1945–47	2	1	1
65921–68532	2551†	R-30/40-24*	1947–48	3	1	4
73001–76554	3399	R-30/40-16*	1940–42	3	1	2
90001–91021	807	R-30/40-8*	1931–32	1	0	1
91022–98718	7112	R-30/30-9*	1938–40	7	2	6
100401–100500	97	R-50-3,4	1941	0	0	0
200001–200100	98	R-70-2	1932	0	0	1
200301–200587	278	R-50-5	1945–47	0	0	1
Total	37677			36	12	37
ORER Total	38563					

*if rebuilt from 30-ton cars, classed as R-30-x; if rebuilt from 40-ton cars, classed as R-40-x

†proportioned by class size from actual total of 3 number groups, 5889 cars among PFE 62501–68532

that time, in the first two columns. I have omitted a few relatively rare car groups.

The next two columns to the right identify the PFE car class of each number group (nomenclature is explained in a footnote), and the year(s) built or rebuilt.

Finally, the three columns at the right show how a model car fleet might be proportioned if one chooses to have approximately one model for each 1000 prototype cars. The next column to the right shows the same idea, but for one model to

"PFE policy was to repaint wood-sheathed cars every four to six years, and steel cars every 10 to 12 years."

each 3000 PFE cars, to reduce the number of needed models. I should emphasize that these particular proportions are arbitrary. One could readily choose different numbers.

My own choice is to shoot for the one per 1000 set of cars. The far right column shows that I have not rigorously done that, but broadly speaking, have gotten into that ballpark.

Note that at the bottom, under the total number of cars shown in the second column, I have added another line with the actual total of the complete PFE car fleet in that ORER issue. It is only about 2% larger, meaning that the car number groups I selected for Table 2 do encompass 98% of the total PFE car fleet.

Next I turn to modeling some of these specific classes shown in Table 2. But first, I want to give an overview of paint and lettering schemes, since these will apply to all the models in one way or another.

18: This photo show the ceaseless movement of PFE cars, loaded eastward near Green River, Wyoming on September 3, 1955. An important value in this image is the vivid depiction of the variation of weathering among the many PFE cars. - *photo, John E. Shaw*

Painting history

There were long stretches of time during which PFE paint schemes remained essentially constant, and there were also periods of somewhat rapid change. For the transition-era modeler, the latter is the case. I will present only a brief summary of the history, along with what it means for a 1953 modeler like myself. Those modeling other periods should, of course, construct a similar framework for themselves.

As background, it should be recognized that PFE policy was to repaint wood-sheathed cars every four to six years, and steel cars every 10 to 12 years. Shop data show not only that this policy was followed, but also that repainting was freely applied for cars even with minor repairs. And recall that the cars

passed through PFE shops after nearly every trip, so this kind of repainting schedule could readily be carried out.

Paint schemes

In 1922, PFE introduced the use of railroad emblems or medallions, as PFE called them, SP on one side of the car and UP on the other, with the SP emblem toward the B end. (Always a bane of model manufacturers, this meant that the two car sides had to be separately decorated.) At this time, cars were a yellow color similar to UP Armour Yellow, as they had been since 1906. The original UP medallion said "Union Pacific System" in the blue field at the top, and there was a diagonal banner promoting "The Overland Route."

The new scheme was applied throughout the fleet, and PFE records indicate that no medallion-less cars remained by the end of 1928.

In 1929, PFE changed the color of its car sides to orange. It was called Light Orange and is indistinguishable from SP's later color, Daylight Orange. Evidence from PFE shop records indicates that essentially all cars in the fleet had been repainted by 1934.

In 1936, UP made corporate changes which folded most subsidiaries into the parent railroad, and the word "System" was then discontinued from the UP medallion. The plain emblem continued in use until 1942, when UP discontinued the diagonal Overland banner.

In the late 1930s, as the Depression eased and the run-up to World War II began, PFE shops were very active, not only repainting older cars, but rebuilding thousands of other cars. By the start of the war, it is likely that only a few of the UP "System" medallions were still in service.

On June 15, 1946, the two-emblem scheme with the plain, colored UP emblem was introduced (and both car sides were identical). In the ensuing several years, the shops were again very active, catching up with wartime deferred maintenance and continuing a very large rebuilding program. By 1949, wood-sheathed cars with diagonal-banner UP emblems would have been rare.

"During 1949, side hardware on PFE cars, painted black since 1906, became the same orange color as car sides, except only the side sill and center step, which remained black."

Class R-40-10 steel cars, built in 1936, would have been due for repainting by then and many would have lost their original UP "banner" emblems by 1949.

During 1949, side hardware on PFE cars, painted black since 1906, became the same orange color as car sides, except only the side sill and center step, which remained black. The color two-emblem scheme continued, still with each side of the car identical, and with the SP emblem nearest the car door.

In June 1950, a major change came with the UP medallion becoming black and white instead of red, white and blue. The new UP emblem can be readily recognized even in black and white photographs because the word "Railroad" was added in the field at the top. Side hardware remained as in the 1949 change.

19: Empties westward on Sherman Hill, also in September 1955. This image also shows the variation of weathering among the PFE cars. – photo, John E. Shaw

Then in June 1951, the side sills and center steps also became orange, along with the entire car side. The arrangement of medallions also changed, with the SP emblem now nearest the B end on each side, making the two car sides different, with emblem arrangement reversed between the two.

In this 1949-1951 period of painting changes, the shops continued to repaint many cars, so examples of each of the 1949, 1950 and 1951 schemes can be readily found in photos. As a 1953 modeler, I can accurately include samples of each in my fleet.

A comment on weathering: with most prototypes, modelers are accustomed to weathering more heavily for older paint schemes, and the farther a particular paint job is in the past (relative to one's modeling era), the dirtier it should be. But this really cannot be applied to PFE cars. We know that thousands of them were washed every year, from the 1920s into the middle 1950s.

During 1937-1942, for example, about 19,000 cars were washed each year. So age alone cannot determine how dirty a PFE car ought to be, see (18) and (19).

PFE classes

Now let's look at how some of these classes can be modeled – some have multiple possibilities. I begin with the larger classes.

Class R-40-23. This was PFE's largest class of new (as opposed to rebuilt) cars, and as Table 2 shows, was divided into two number series, 5001-8000 and 46703-48702, totaling 5000 cars when new. The best and most accurate model in HO scale

20: This model of PFE Class R-40-23 is an InterMountain ready-to-run car. It models a repaint, using the paint scheme introduced in 1951, though all side hardware should be orange. The UP emblem is black and white, and the SP emblem is toward the B end of the car on both sides, thus making the two sides non-identical. In the background, another reefer is about to be spotted at the ice house in my layout town of Shumala.

is the InterMountain car. They have offered cars both as kits and ready-to-run in both number series.

It should be mentioned that this class is evidently the prototype for the Athearn steel reefer, although both underframe and ends of that model have some discrepancies from the prototype.

These cars were all delivered in the 1946 paint scheme with the emblems of both railroads on both sides, with the UP emblem in red, white and blue. But in the 1950s, many of the cars were repainted in the then-current scheme of two emblems each side, but with the UP emblem in black and white. My model of one of these repainted cars is shown, see (20).

Class R-40-10. Table 2 shows that this class was the third-largest of PFE's classes and the first class of all-steel cars. For some years, InterMountain has marketed a very accurate and complete model for this car class. It is by far the best modeling option. They have numbered many of their models in a restricted number series, but with model PFE decals (more on that below), one can easily change car numbers to spread the models over the entire class number series, see (21) for my model.

21: This car was built from an InterMountain kit for Class R-40-10. Car number was changed into the 41000 group for variety. The paint scheme shown is the post-1946 two-emblem scheme, applied when many R-40-10 cars were repainted after World War II, with their original paint 10 or more years old. It has received the car-fan upgrade and a steel-grid running board. It is shown at the winery in my layout town of Ballard.

22: This representative of PFE Class R-40-26 is a Challenger brass model, which was repainted and relettered correctly. The model originally had a fan control box below the side sill on this right side, which is incorrect; it was removed. The model is shown on my layout at Ballard.

By the 1950s, most cars would have been repainted; many also received steel-grid running boards and car fans in the late 1940s and early 1950s. My model shows those characteristics.

Class R-40-26. This was a 2000-car class, not one of the biggest in the PFE fleet, but a distinctive car because it was PFE's first class with sliding (plug) doors. These have been offered in brass

by Challenger Imports, and in resin by Sunshine. Parts for kitbashing have been around too, to modify the Athearn reefer body.

“The Class R-40-19 cars were among the last to receive the 1942-1946 single-emblem paint scheme, and in my modeling year of 1953, some probably still retained it. ”

For my two cars, I did one of the kitbashes, and for the second car, I decided to correct the shortcomings of the brass model. There were some minor detail errors, and the car color and lettering were seriously wrong.

I adjusted the details and repainted the car sides Daylight Orange, then relettered with the old Microscale set 87-501, with a few bits of lettering from other sets, notably Champ set SHS-190. Today this would not be necessary, as Microscale 87-501 has been reissued in a much better version, thanks to some meticulous research by Dick Harley, and everything on this model could now be correctly lettered with that one set. My completed model is shown, see (22).

Class R-40-19. The two rebuilt classes of wartime were R-30/40-18 and -19. Both had solid steel (panel) roofs and W-corner-post Dreadnaught ends; neither class was rebuilt with car fans. The primary visual distinction between them was the change from wood running boards on the -18 cars, to steel-grid running boards on the -19 cars.

The two classes combined had 3500 cars, a large group, and I have three cars from these two classes (see Table 2). Terry Wegmann cut dies for the ends and roofs so that these cars could

23: This car of Class R-40-19 is shown in a mainline train on my layout, near the junction of Shumala. It is a lightly modified ready-to-run car from InterMountain, which was manufactured with Red Caboose and Terry Wegmann parts. After weathering, a reweigh date stencil and route card were added. It still has its wartime single-emblem paint scheme, but is not too dirty, probably reflecting washing frequency.

be converted from Red Caboose kits, and InterMountain has offered them in limited runs as ready-to-run cars. The model I show (23) is one of those.

The Class R-40-19 cars were among the last to receive the 1942-1946 single-emblem paint scheme, and in my modeling year of 1953, some probably still retained it. Mine is modeled that way.

Classes R-40-14 and R-40-20. These classes of steel cars followed the R-40-10 in 1941 and 1945, respectively, and differed substantially only in having Dreadnaught ends with rounded or W-corner-post ends rather than sharp-cornered ends. At 1000 cars each, I wanted to model a car of each class.

24: Here is my model of a Class R-40-14 car, repainted into the 1951 paint scheme. This is an Athearn reefer body with replaced metal grab irons and sill steps, a steel-grid running board, and correct resin ends with free-standing details. Decals are a mixture, but nowadays this car could be done entirely with the new Microscale set 87-501. The model is posed in front of the Phelan & Taylor packing house at Shumala on my layout. The structure is a Showcase Miniatures kit.

I did so with Athearn reefer bodies, adding replacement correct ends. I got my ends from Richard Hendrickson's former Westrail moldings; these are now available from Southern Car & Foundry.

I show here my Class R-40-14 model (24). By 1953 these cars were 12 years old, and most would surely have been repainted into a later scheme, likely the two-emblem black-white scheme.

That is what I chose to apply on this model. Again, the new Microscale set 87-501 is the one to use for this scheme.

25: Class R-50-5 was distinctive in that it is 47 feet long, instead of the 41 feet of nearly all the other PFE ice cars. The class was mostly used for frozen food. My model is the Sunshine resin version and is shown in this view up Nipomo Street, spotted at the wholesale grocer, Peerless Foods, in my layout town of Ballard. The car was built by Dennis Williams and lettered and weathered by me.

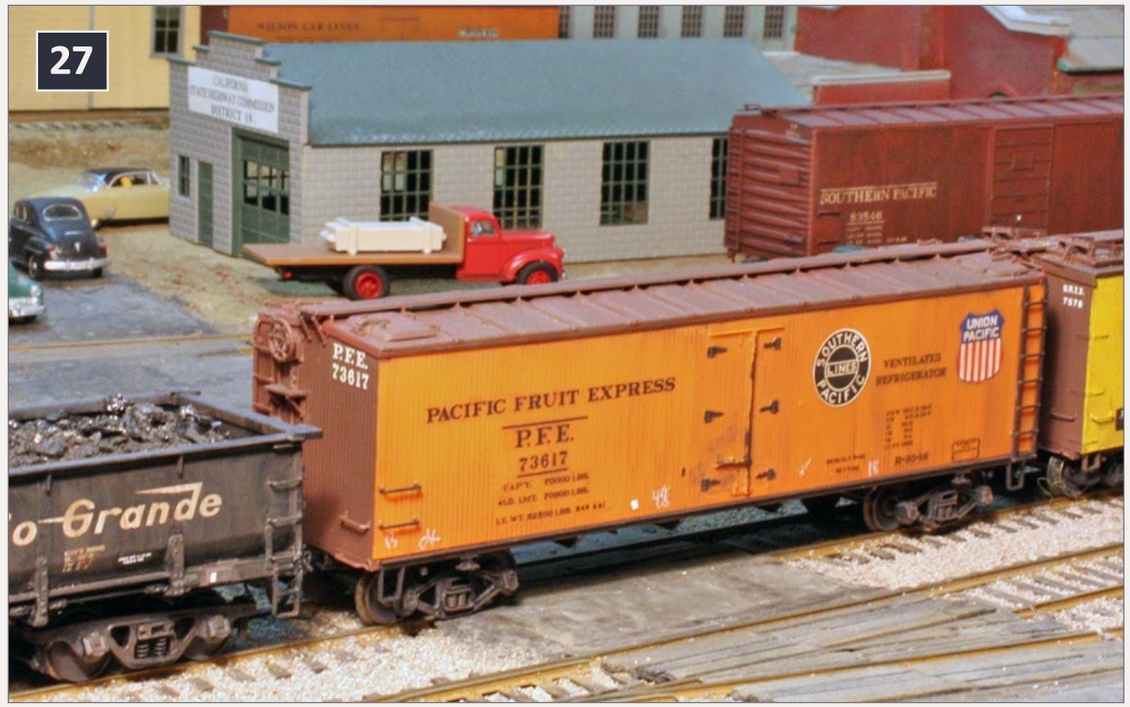
Class R-50-5. Although PFE originally built 400 cars of Class R-50-1, when rebuilt, they were split into two new groups of classes, R-50-3,-4 and R-50-5. Both the original cars and the R-50-5 rebuilds have been offered in resin by Sunshine. As the -5 cars were the most numerous survivors of the original 400 cars, I decided to have one, even though this class size falls below my cutoff of 1000 cars. My Sunshine model is shown, see (25).

Frozen food was a growing category of perishable shipment after World War II. PFE's ice-refrigerated (and heavily salted) cars

like this class would be superseded in a few years by mechanical reefers, which could better handle the low temperatures needed to ship frozen loads. But in 1953, ice-salt refrigeration still dominated frozen food shipping.

Class R-40-25. During 1949-50, PFE acquired another 3000 all-steel cars, largely similar to the R-40-23 cars which preceded them, although the cars were manufactured with the then-new diagonal panel roof. These were also the first new PFE cars to receive the 1949 paint scheme modification, with most side hardware orange. Adding the correct roof could be done by kitbashing a new roof onto any model of an R-40-23, but InterMountain has offered the R-40-25 cars with all correct parts, so there should be no need for any kitbashing. An InterMountain

26: Class R-40-25 is important because it comprised 3000 cars, although visually it is not much different from preceding all-steel Class R-40-23. It differs primarily in having a diagonal-panel roof. One of my models of this class is shown being spotted at the ice deck in Shumala. This is an InterMountain ready-to-run model, with some weathering and route cards added.



27: Seen here at the Nipomo Street crossing in Ballard on my layout is a car of Class R-30-16, with its distinctive wood-sheathed ends and steel roof. This was built with Terry Wegmann parts on a Red Caboose body. The paint scheme represents a postwar repaint of a car originally rebuilt about 1940.

ready-to-run car, which I weathered appropriately for the age of the paint scheme, can be seen in (26).

Class R-30/40-16. This was one of the larger classes of rebuilt PFE cars, about 3400 cars, and is distinctive in that the cars were given solid steel roofs of straight-panel design when rebuilt, but retained their original wood-sheathed ends. There has not been a commercial kit for this class, but at one time noted die maker Terry Wegmann made roofs and other parts for this car that could be added to a Red Caboose car body. Terry never sold many of these kits, and they are

no longer available except by private sale, but I was lucky enough to pick up two of them for my fleet. For one of these completed models, see (27).

Class R-30/40-24. This is a particularly interesting rebuild class, not only for its size (more than 2500 cars) but for its appearance. It was the only PFE rebuild class to receive Improved Dreadnaught ends, with narrow intermediate ribs between the large ribs, and initially the cars received plywood side sheathing when being rebuilt.

28: PFE 67412 is being picked up from the ice deck by Consolidation 2829, with the Shumala yard office behind the engine. My stand-in model of a plywood-sheathed Class R-40-24 car is modified from an Athearn kit, by the simple expedient of slicing off the side rivets and door hinges, replacing the latter with Grandt Line part 5168 hinges, adding a Precision Scale brass washout plug as a fan shaft, and replacing grab irons, ice hatch hardware, and running board (with etched metal grid). The original's tabbed side sill was also removed, and Detail Associates stirrup steps were applied. This is the 1949 paint scheme, with most side hardware orange, but still with color UP medallions. For those preferring a more accurate car body, a Sunshine resin kit has been produced for this class.

Over time, the plywood choice proved a poor one, as water got inside the sheathing and caused it to delaminate, warp, and curl. Within a few years, shops were directed to re-sheath any -24 car with such symptoms with tried-and-true tongue-and-groove (T&G) sheathing, and photos show that many cars were in fact so reworked. But the plywood did survive on some cars into the middle and even late 1950s. So 1950s modelers can choose to have both plywood and T&G versions of this class if they wish.

I have modeled the -24 cars both ways. The plywood version can be modeled, at least as a stand-in car, by simply sanding off the rivets on an Athearn steel reefer or other car with Improved Dreadnaught ends, and replacing the door hinges with the long-strap type used on wood car sheathing.

The model I show (28) is of that kind, and is otherwise pretty much the Athearn body with appropriate re-detailing. The Athearn underframe, however, has essentially no relation to an actual R-40-24 underbody. A much more accurate version is quite possible, because there has also been a Sunshine resin kit for the plywood cars.

"The Athearn wood-side reefer ... has the correct door hinges, and needs only to have the sheathing retainer strip along the bottom of the car side removed ..."

The T&G version is also easily created, at least as a stand-in, with the Athearn wood-side reefer. It has the correct door hinges, and needs only to have the sheathing retainer strip along

the bottom of the car side removed, and some of the clunky Athearn details remedied.

Class R-30-9. Although one of the last classes I will illustrate here, it is certainly not the least among the PFE car classes, numbering more that 7000 cars at one time. I believe this is a frequently overlooked class, and there is no good reason not to have a representative number of models, because Red Caboose produced a fine model of this car. Both kits and, more recently, ready-to-run cars have been offered.

I have built a couple of the Red Caboose cars from kits. The one shown (29) was modeled with ice hatches latched open for vent service, an operating feature described in Part One of this column.

The Red Caboose ice hatches have plugs molded on the underside, as do the ice hatches of some other makers of refrigerator car models. I painted them light gray before installation.

I think the opening angle of the hatches here, which corresponds to the top of the kit's latch bars, is a little too high, and I will probably arrange my next model a little lower. But this arrangement does offer an interesting variation in your reefer fleet.

Ice service cars. Throughout its history, PFE needed to move ice from places where it was plentiful to places with

29: Class R-30-9 is among the largest PFE classes, and yet is often neglected by modelers. My chart, Table 2, should make the need clear. My model, shown in a train passing the Shumala section house, is a Red Caboose kit, built with ice hatches latched open for vent service. This particular kit was a special run for an annual meeting of the Southern Pacific Historical & Technical Society. It is lightly weathered to indicate a car recently washed.

30: This ice service car is spotted at the ice unloading door of the ice house at Shumala. Its ice hatch openings have been blanked off and lettering changed for its service assignment. This is a modified Red Caboose car. The white placard at the left of the car side reads "PFE ICE SERVICE RETURN TO LOS ANGELES WHEN EMPTY," and is available in the new Microscale 87-501 set.

a shortage. They simply used older or worn-out cars for this service. Floor racks were removed to make ice handling easier, and usually the ice bunkers were removed and the hatch openings blanked off. (The cargo, of course, refrigerated itself.) By about World War II, such cars were usually stenciled "ICE SERVICE," and Microscale set 87-501 has this lettering.

I modeled such a car for my ice transfer (ITP) type of facility at Shumala, using a Red Caboose model of Class R-30-9, modifying the lettering and blanking the hatch openings. To see the model, refer to (30).

This not only affords a different car in my PFE fleet, but adds another car destination as well.

Western Pacific cars. As many modelers know, the PFE roster included a block of cars owned by Western Pacific, but under contract for PFE use. Originally there were 2775 of these cars, and most of them were reconditioned in 1939-1940. But they were badly deteriorated by 1950 and many were being scrapped. Finally about 900 were reconditioned again in 1954 and returned to service.

This group is large enough for me to want one in my model fleet. But as it happened, the rapid shrinkage of the WP car group had resulted in an almost zero fleet size in 1953. Surviving old cars had been withdrawn from service, pending agreement with WP about rebuilding, and the rebuilds did not start to appear in any numbers until the fall of 1953. Strictly, for much of 1953, the fleet is too small to include in Table 2. I suppose I could say I have instituted a small time warp to have one of the original WP number-series car, more probable in 1951 or 1952 than my model year of 1953. I show my single WP car here in (31).

31: My lone example of one of PFE's Western Pacific cars is this Red Caboose kit, shown here being switched in front of the Shumala depot by big Baldwin 5212. This reefer is pretty much built stock from the kit. I did equip the car with AB brakes, but little else was changed besides addition of weathering and route cards. (Construction of the depot was described in my Model Railroad Hobbyist column for November 2012.)

Car modeling summary. These example cars are intended to illustrate the variety of available models.

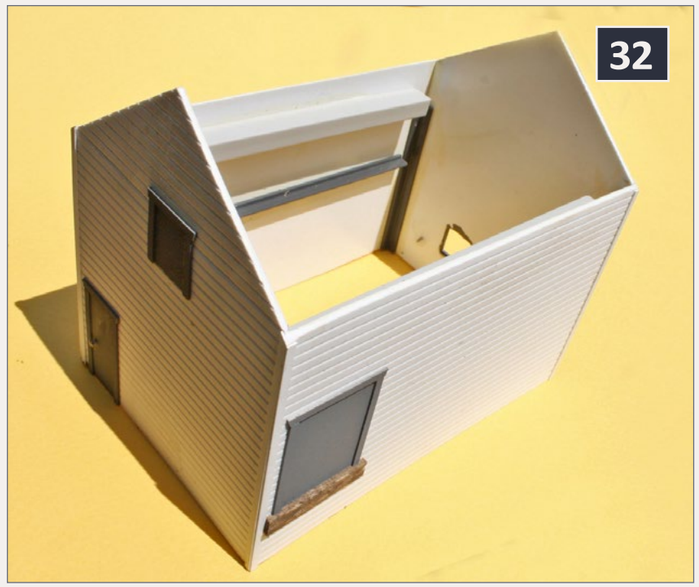
As mentioned, most of the classes can be modeled with various approaches, largely because PFE used an essentially standard superstructure, whether for wood-sheathed or steel cars, making many classes identical in major features, if different in detail. Table 2 provides a basis for model choices if a modeler wishes to proportion his or her PFE roster to the prototype.

Let me make one important point. It often seems that modelers do not realize how many wood-sheathed cars continued on the PFE roster, even well after the arrival of thousands of all-steel cars, just because the PFE roster was so big.

For example, in April 1950, 62% of PFE cars were wood-sheathed; by January 1958, the fleet was still 47% wood sheathed (and incidentally, there were 712 mechanical refrigerator cars on the roster). If nothing else, models should be chosen with this proportion of wood vs. steel in the car fleet in mind.

Modeling an Ice House

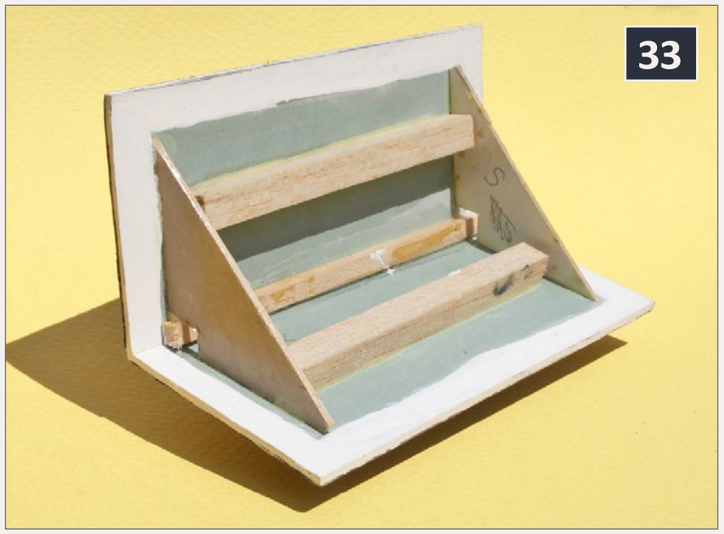
As I stated in Part One, describing prototype operations, most icing facilities in PFE territory were ice transfer plants (ITP), and many were not really large. This permits modeling a small icing facility that is not out of scale with the rest of the layout.



32: The styrene building is built with novelty siding, reinforced near the top of the sides with square ABS ubing, and with an angle shape at mid-height, along with corner angles. This kind of construction is quick and easy.

In my town of Shumala, I have done just this, with an ice house set up for rail delivery of ice from elsewhere, and a two-car deck. The building is a simple structure of styrene novelty siding, with a Grandt Line window and simplified doors. I show the inside of the completed structure (32) – very simple styrene modeling.

Almost all my structures have removable roofs, for future access to replace window glazing, add lighting if desired, and so on. You can see the roof construction for this structure (33), which is heavy cardstock amply reinforced. I modeled the sides of the clerestory atop the roof with styrene clapboard, to suggest louvers in the clerestory.



33: The ice house roof is made from heavy cardstock, thoroughly reinforced inside with quarter-inch square balsa and with cardstock roof formers to ensure matching roof pitch with the building ends. The outside of the roof has masking tape cut into strips to simulate rolled roofing, and painted medium gray.

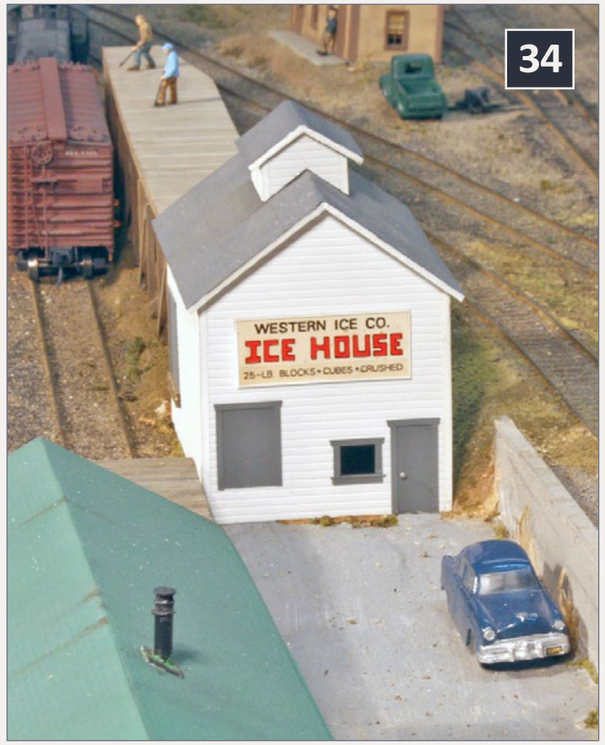
An end view of the ice house (34) shows where drive-up customers would purchase ice. A small-town ice facility like this would likely manufacture small amounts of clear ice for consumer sale, but would have limited ability to produce ice in the quantities needed for icing refrigerator cars around peak harvest season.

I present an overview of the ice house and deck here (35). The deck is entirely of stripwood, pre-stained and built board-by-board, and supported on bents hat were constructed using a simple fixture to ensure that they would be identical.

I have not added a chain along the deck for moving ice, as the deck is probably too small to justify such an installation. Some small decks did have a sheet-steel track for sliding ice blocks, but again, not in any case I know of where the deck was this small.

I wanted to have workmen on the deck, and with conventional plastic figures, these are easily chosen.

I made their ice tools, a bident and a pickaroon from brass wire (36).



34: This is an end view of the ice house, with an office door and window, and a service door for drive-up customers. The building is roofed with masking tape simulating rolled roofing, and painted gray.

This ice deck is freelanced and not based exactly on any prototype, but the bents supporting the deck, the size and shape of the building, and other features are definitely chosen to reflect prototype practice.

The bents are patterned on the standard PFE bent, shown in a drawing in the PFE book, page 294 (for full reference to the book, see Part One).

For my small SP branch, this is probably a big-enough ice deck, particularly since some of the packing houses on the branch have their own pre-cooling facilities for produce. That means they will not order pre-iced cars, and so the cars they load only

35: An overall view of my two-car ice deck at Shumala. The building is styrene novelty siding. There is an ice unloading door at trackside, since this is not a large-scale manufacturing facility, it needs to have ice brought in to have a sufficient supply.

36: I've posed a couple of commercial figures on my ice deck, with arms moved to suit the tools. I made the bident at left and a pickaroon at right, from brass wire. I glued the figures to the deck with white glue, so they can be removed and repositioned if desired. I don't normally put ice blocks on the deck, but do have a couple of clear plastic lumps which can be used. They are sanded lightly to make them cloudy rather than clear; clear ice is a consumer product and not necessary for icing refrigerator cars.

have to be iced once, at initial icing when they are outbound. Packers without pre-coolers are likely to order cars pre-iced, which then have to be initially iced as well.

Concluding Remarks

The cars, icing facilities, and operations connected with Pacific Fruit Express are an interesting story and can largely be modeled conveniently today. I have provided examples of some of the opportunities, without going into a lot of detail about any individual car modeling projects, because I only want to suggest scope, not to lay out too many specifics.

The modeler who needs only a couple of PFE cars in a fleet of freight cars can choose whatever is attractive on the roster of Table 2, if modeling 1953 or a time close to it. For other modeling periods, a roster like Table 2 should be constructed for the modeling year chosen, to permit choosing cars in a realistic way. Here, of course, I assume that car choices are intended to be in proportion to the PFE roster. If not, one can choose any appealing models.

As for operations, anyone can use the outline above of PFE practice to handle model PFE cars appropriately, including movement of empties, loading and icing cars, and moving loads to market. ☑

Once the rocks dry, consider applying weathering powders to enhance the dirty, gritty rock colors. You can find more on weathering powders in the Nov/Dec 2010 issue of MRH: mrh-mag.com/magazine/mrh-2010-NovDec/weathering_powders.

– Joe Fugate

Q. Way back in the 1990s, *Model Railroader* published a DIY circuit for a reefer sound generator with a 555 timer, a pseudo-transducer, plus a myriad of parts and a 9 volt battery. As crude as it was, if you got two or more of these things together, it started sounding like a refrigeration unit.

Fast forward to now, Athearn releases the 57' FGE reefer (2) with vastly superior sound. Here's when things get fuzzy . . . I don't recall hearing a 1960s-1990s era reefer generator "cycling off" as the Athearn model does. I'm not claiming Athearn is wrong. I asked a modeler/real life BNSF engineer, and he recalled the same. He remembers them being always running. With Ring Engineering's pickup freight car truck, and ITTC's (ittproducts.com) sound unit, the timing seemed right to add sound to my existing PFE Cold Block. I have a few recordings of running reefers and am going to vary the sound among the cars to avoid phase cancellation and to make things sound more realistic. Does anyone else have any memory to the reefer generator "cycle off"?

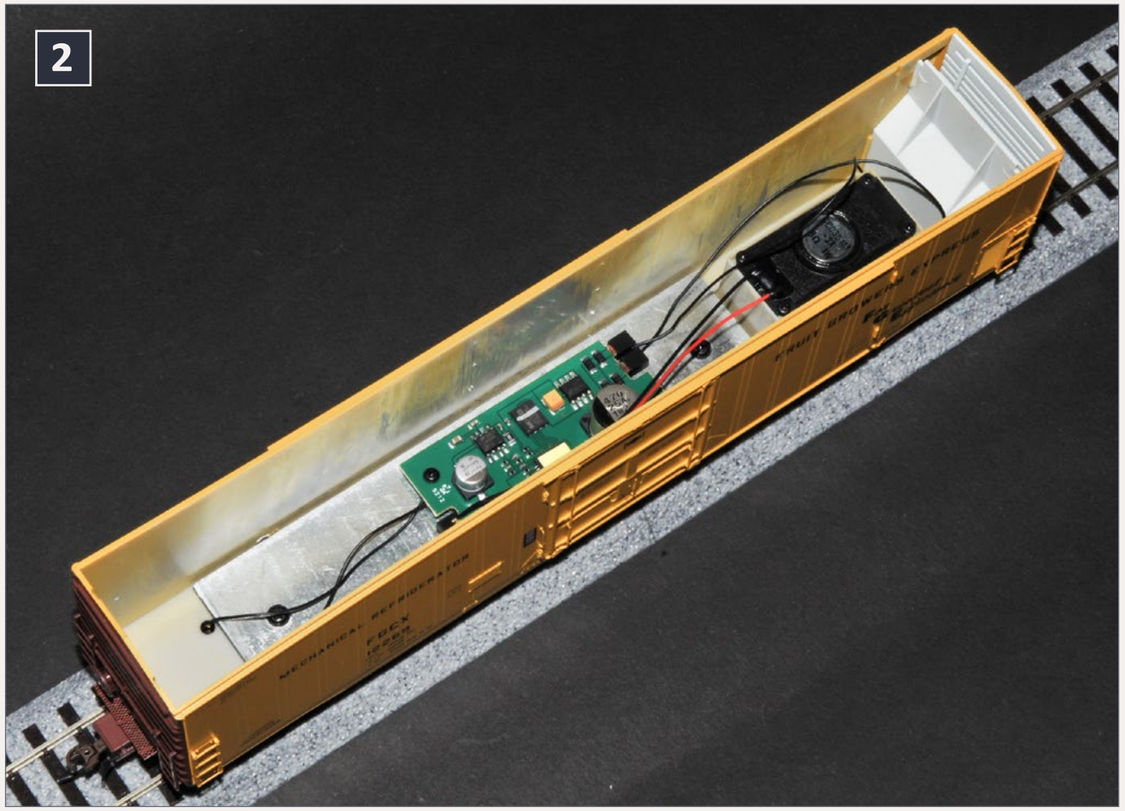
– Chris Palomarez

A. Having spent some time around a large Pacific Fruit Express facility in the 1970s, our recollection was the same as that of Chris and his friend. Just a buzz. No automatic periodic starting and stopping. But we didn't work for the railroad or PFE, so we sent the question out to the experts. Here's what they said:

The compressor may cycle, but the engine might not. I can remember having to check the fuel level in mechanical reefers every time we humped one, and the engine was always running on a loaded car. I don't think they were designed to shut down and restart automatically, the way modern refrigeration units are.

– Ken Rickman

The older reefers used to run all the time and the compressor cycled on and off as needed. When diesel fuel hit $4 a gallon everyone wanted to save some money. Better insulation,



2: Athearn Genesis sound-equipped 57' FGE mechanical refrigerator cars produce start-up, operating and shut-down sounds. The SoundTraxx output is different for '60s-'90s cars with diesel genset systems, and for modernized cars with tractor-trailer style refrigeration units. The system works on both DC and DCC layouts and the volume is adjustable.

instant-on, and electronic control has saved millions in fuel costs. Better to start and run the diesel instead of idling it for hours while the compressor is not cycling. In the late seventies I pulled frozen foods out of Ohio and could burn up about 60 to 70 gallons of fuel just for the reefer in a 24-hour day. These new units would take a week to burn that much and still keep the load frozen.

– Pete

Read the whole thread, including Chris's sound experiments, at: **model-railroad-hobbyist.com/node/15205**.

More discussion about the Athearn sound-equipped refrigerator cars: **model-railroad-hobbyist.com/node/8781**.

More discussion about old and new mechanical reefers: **trainorders.com/discussion/read.php?1,3180325**.

Q. Now that I can use the DCC decoder to control headlights on my locomotives, how do I use them? When should the lights be on, dim, or off?

A. You didn't say when and where, but here are the Union Pacific rules from 1972. Rules on other railroads may vary in detail.

The headlight should be displayed, burning bright, at the front of a train both day and night.

Headlights are dimmed

- In yards where yard engines are employed
- When standing close behind another train
- When standing on the main track awaiting another train which is to take the siding, but not until the approaching train dims its headlight
- Approaching and passing head end and rear end of a train on an adjacent track
- Approaching locations where train orders or messages are to be handed up
- At other times to permit passing of signals or when safety of employees or others requires it.
- On yard engines, headlights must be displayed to the front and rear at night or at any time the view is obscured by storm or fog.

The exceptions to the dimming rule are in foggy or stormy weather, and when approaching or passing over public crossings.

Headlights are turned off when the train has stopped clear of the main track to meet a train, or is standing to meet a train at the end of double track or at a junction.

– MRH

TIPS

Make a service cradle

I frequently need to work on the underside of steam locomotives, and bought a pre-cut foam cradle that served me well for a time. When not working down below, I generally keep the locomotives on a sheet of ½” foam on the workbench to prevent bending small detail parts or scuffing of the finish on the workbench top.

One day I happened to have several small foam cubes nearby and used them to prop up a tender at an angle to