

ICE BUNKER REFRIGERATOR CAR MOVEMENTS ON THE SANTA MARIA VALLEY INDUSTRIAL RAILROAD

by Michael G. Jordan

Many model railroads are designed around a single commodity such as coal or iron ore. The Santa Maria Valley Industrial Railroad is designed around the movement of ice refrigerator cars.

The Santa Maria Valley Railroad, located on the central coast of California, was the inspiration for the Santa Maria Valley Industrial Railroad, a double deck railroad in a 12 foot by 20 foot room. The Santa Maria Valley Industrial Railroad interchanges with the Southern Pacific at Guadalupe and runs East up the Santa Maria River Valley to Santa Maria, California. Southern Pacific trains are staged out of an active staging yard on the lower level and run north or south to Guadalupe, where cars are dropped off for the SMVIRR and local industries at Guadalupe. An article about the real Santa Maria Valley Railroad was published in the June 2013 issue of Trains Magazine.

REFRIGERATOR CAR MOVEMENTS

In reading the book "Pacific Fruit Express", written by Bruce Jones, Robert Church and Tony Thompson I discovered that there is more than; setout/hold/pickup movements for refrigerator cars.

Refrigerator cars could be iced prior to loading or iced after loading. After they were loaded some of the car loads could be cooled prior to the trip east, thus reducing the need to be re iced during transit. Cooling was done, by using internal car fans or placed at a special cooling plant. After the load was cooled the car would have to be re-iced. Depending on the produce shipped, loaded cars could be topped with shaved ice. Some cars might have to be cleaned prior to the shipper accepting them or even fumigated if they were infested with insects. All these steps create additional car movements.

With four packing plants on the layout and four more in the packing district, along with a precooling plant, three ice docks and team tracks there can be over 60 refrigerator car movements during an operating session. This does not include the general freight traffic.

REFRIGERATOR CAR TYPES

Refrigerator cars came in four basic designs; vertical wood sided (No external fan drive) figure 1, Smooth sided, steel or plywood (External driven fans) figure 2, steel sided car (with electric internal driven fans) figure 3. There is a fourth type, mechanical refrigerator cars, but they are too modern for my era.

To add interest, I decided that certain crops would be packed in the three different types of cars.



(1) Vertical wood sided refrigerator cars, would ship root crops; potatoes, carrots, onions, rutabagas etc.



2. Smooth sided refrigerator cars with external power circulation fans, (cars with a dot on the side, the dot is just above the left truck, represents an external pulley that an electric motor would be connected to, to drive the cars internal fans). These cars would ship mostly produce; lettuce, peas, beans, etc. but could be used to ship citrus as well.



3. The third is a steel sided car (without a dot) this represents a refrigerator car with internal electric driven fans that only required an extension cord to be plugged in to drive the internal fans. These cars are used to ship fruit and citrus.

Because of the many movements that may be required to “set out” a refrigerator car and the three different types of refrigerator cars, a single use work card was created. With this work card the shipper, load, type of car and the sequence of car movements can be indicated all on a single use card. The sequence of car movements are recorded using one of the owner’s collection of railroad punches.

PACKING DISTRICT		
WORK CARD		
CAR #		
SPOT		
LOAD		
TYPE OF CAR		
DOT	External Driven Fan Car	
WOOD	No External Fan Drive	
NO DOT	Internal Driven Fan Car	
HANDLING SEQUENCE		
	ICE	
	LOAD	
	PRE-COOL	
	RE-ICE	
	TOP ICE	
	CLEAN	
	FUMIGATE/GAS	

Car Card / Way Bill

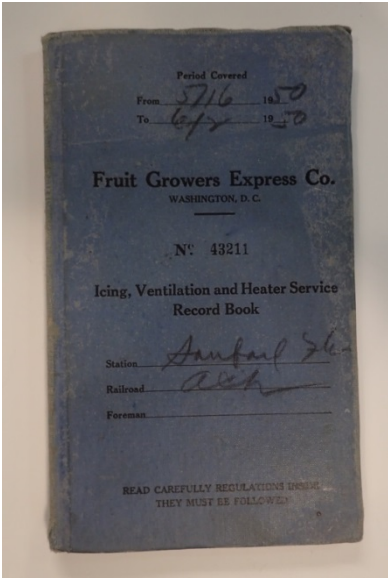
Each district is identified by using a different color; yellow for the packing district, blue for the town of Guadalupe and green for the Santa Maria Valley Industrial Railroad.

The top third of the work card shows the car number, where to spot the car and what is to be loaded. The car number is added by the switching crew. The packing plant orders cars by what produce or fruit is being shipped. The railroad sends out cars by type and not by car number. The correct type of car is spotted at the packing plant, the crew will enter the car number, and this gives the crew more interaction with the railroad.

The center third of the card shows the type of car to be used.

The bottom third of the card shows the type of car movements: **icing** (icing prior to loading or after loading depending on the sequence number), **loading**, (loading the car) **pre cooling** (this is cooling the loaded car prior to leaving the packing area), **Re-icing** (or topping off the ice bunker if it was iced prior to loading), **top icing** (blowing shaved ice over the boxes in the loaded car), **fumigation/gassing** (fumigation to kill insect infested cars and gassing to help extend the shipping time for certain melons), and **cleaning** the inside of the car (most cars were cleaned in route back to the agricultural areas but some were missed or did not get cleaned to the satisfaction of the shipper).

I found this FGE record book at a railroad flea market



FORM T-1b REV. 3-5-40

ORIGINAL RECORD OF THE INITIAL ICING AND/OR RE-ICING OF CARS BY FRUIT GROWERS EXPRESS COMPANY

At SANFORD (PLT.), FLA. Station 5-26 1950

On Rails of A. C. L. R. R.

(Book No. 43211) **38**

ORIGINAL RECORD OF THE INSPECTION AND SERVICE PERFORMED ON CARS UNDER VENTILATION OR HEATER SERVICE BY THE FRUIT GROWERS EXPRESS COMPANY

At SANFORD (PLT.), FLA. Station 5-26 1950

On Rails of A. C. L. R. R.

Time Placed Icing Platform	CARS		Type of Bunker	Initial or Re-icing and Svc. Amt. of Salt Ordered OR Class of Service	Time Icing Commenced	Inches Vacant Bunker Space			Time Icing Compl'd or Other Service Perform'd	Were Bunkers or Tanks Filled to Capacity or Heaters Interchanged to (RR)	Kind of Ice or Heaters Fueled	Quantity Supplied (Pounds)		Were Drain Pipes Clear?	Numbers and Initials of Heaters in Car	Heaters Burning YES or NO		Temp'e at Time Service Performed	Hatches Open or Closed		Heaters Cleaned Yes or No	Commodity	
	Initial	Number				A End	B End	Total				Ice	Salt			(15)	(16)		How Found	How Left			(19)
12 ⁰ a	ARC	16692	R	3 ⁴⁰ J	13 ⁰ a				14 ⁷ a	Y	1	4200	315							C	C		/
/	JYK	50890	R	3 ²⁰ J	/				/	/	2	5800	288							C	C		/
/	/	10951	R	3 ⁴⁰ J	/				/	/	3	4600	288							C	C		/
/	/	35231	R	3 ⁴⁰ J	/				/	/	4	1800	288							C	C		/
2 ⁰⁵ a	/	37833	R	3 ⁴⁰ J	2 ¹⁰ a				2 ²⁵ a	/	5	6000	288							C	C		/
/	/	39813	JYK	/	/				/	/	6	9600								O	C		/
4 ³⁰ a	BRG	74907	JYK	/	5a				5 ³⁰ a	/	7	9600								O	C		/
/	WJK	49667	JYK	/	/				/	/	8	9600								O	C		/
/	/	67674	JYK	/	/				/	/	9	9600								O	C		/
/	JYK	37627	JYK	/	/				/	/	10	9600								O	C		/
5 ⁵⁰ a	/	34698	JYK	/	6 ¹² a				6 ²⁵ a	/	11	9600								O	C		/
/	/	33627	JYK	/	/				/	/	12	9600								O	C		/

DO NOT USE SPACE BELOW EXCEPT FOR "REMARKS" OR CORRECTED ENTRY

13

14

OUTSIDE TEMPERATURE

12:01 A. M. 8 A. M. 4 P.

2 A. M. 10 A. M. 6 P.

4 A. M. 12 Noon. 8 P.

6 A. M. 2 P. M. 10 P.

I hereby certify that the above record is true and correct:

Name: Asst Agent Title: Asst Agent

ABSOLUTELY NO ERASURES ADMITTED

If a mistake is made, correction must be made in accordance with Item 4 of instructions herein.

Note line 5&6 15 minutes to load two cars with 15,600 pounds of ice, do not forget the salt noted in column 14.

OPERATION

What is going to be shipped and which company is going to be used is not based on any scientific method. The produce broker (layout owner) checks the layout and the existing work cards and determines what is going to be shipped and which packing plan to use.

The produce broker (layout owner) then takes inventory of car locations and the car sequence movements, along with a chart (see illustration #6) showing what crops are grown and harvested. This helps the produce broker to determine what is to be shipped, and what packers are going to be utilized for shipping. The broker then determines the car movement sequence by numbering the different tasks on the way car card/way bill. (see illustration #11)

In addition to what crop is being harvested, the climate on the route and the car type also determine the car movement sequence. i.e. If it is summer, some loads would be pre cooled and topped with shaved iced. In the fall a shipment could be loaded, iced and shipped. During the winter maybe no ice, vents opened until cold temperatures would require charcoal heaters to be inserted.

SANTA MARIA VALLEY CROP CHART

CROP	JAN	FEB	MARCH	APRIL	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC
Anise	Dark Green										Dark Green	
Artichokes			Dark Green									
Broccoli	Dark Green					Light Green					Dark Green	
Cabbage				Dark Green								
Cauliflower	Dark Green					Light Green						
Carrots	Dark Green											
Celery	Dark Green		Light Green				Light Green		Dark Green			
Spinach	Dark Green							Dark Green				
Lettuce			Light Green		Dark Green						Light Green	
Peas Green				Dark Green								
Potatos					Light Green	Dark Green			Light Green			
Tomatoes							Light Green	Dark Green				Light Green
Oranges	Orange											
Lemons	Yellow											
Grapefruit	Dark Orange		Light Orange								Dark Orange	

Illustration #6

The darker color indicates peak harvest times. Lemons and carrots are shipped year around. The lighter color indicates less than peak shipping.



#7

Here is a photograph of the packing district module. There is room at Swanson Packing (in the upper left) also at Western Packing, (Large building in the center rear) and at Pacific Packing (in the lower right). Bonita packing (in the lower left) has room at the loading dock.

Checking the produce chart, carrots, cabbages, oranges and spinach are being harvested in the month of August. Swanson Packing ships root crops, potatoes, carrots, onions etc. Western Packing is an independent packing house and ships any type of produce. Pacific Packing is a citrus packing house. Bonita Produce packs and ships, as the name implies, produce.

The Southern Pacific Railroad is notified what types of cars are needed and pulls them from the marshaling yard and sets them over on to the interchange track for the first shift packing district crew to pick up.

Today's requirement is , one wood sided car, one steel sided car with internal powered fans (no dot) and two external powered fan cars (with a dot).

The produce broker now fills out the work card, less the car owner and number. The packing plant and load lines are filled out on the top third of the card. The produce broker also identifies the car type by punching the card with one of the punches from the collection of punches. The next step is to number the sequence of the car moves.

Once the cards are filled out the produce broker delivers the cards to the yard master. The yard master then pulls the appropriate car types from the yard and readies them for the move to the interchange track.



#8

The cars are pulled by type and not by car number from the marshaling yard.

The correct types of cars are found in the yard and pulled are readied to move to the interchange track.



#9

Here you see two cars with dots and one without a dot and a wood sided cars, as requested by the packing district.



The first shift packing district crew is picking up today's empties to be spotted. #10

To add more interest, cars are spotted to the industry by type of car and not by car identification number. The engineer then acts as the conductor, writing in the car number on the work card once it is spotted at the industry. The client does not care what the car number is only that the correct type of car is spotted. This gives the crew more interaction while operating.

Requests also come into the yard master for refrigerator cars for the Guadalupe and Santa Maria packing houses. These are pulled from the yard and sent out on a refeed extra.

Let's follow the shipment of spinach, as described earlier. Produce is shipped in an externally driven fan car; a car with a dot on the side.

For demonstration, the produce broker created five car movement steps.

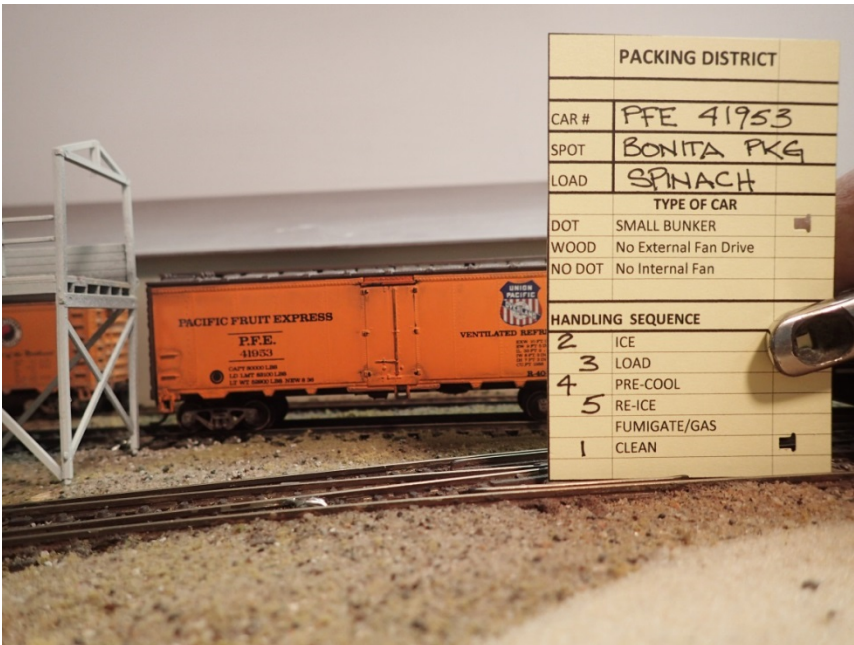
First movement is to clean out the interior of the car. Cleaning of refrigerator cars were usually done in the marshaling yard but some may have been missed or not cleaned to the shipper's satisfaction.



#11

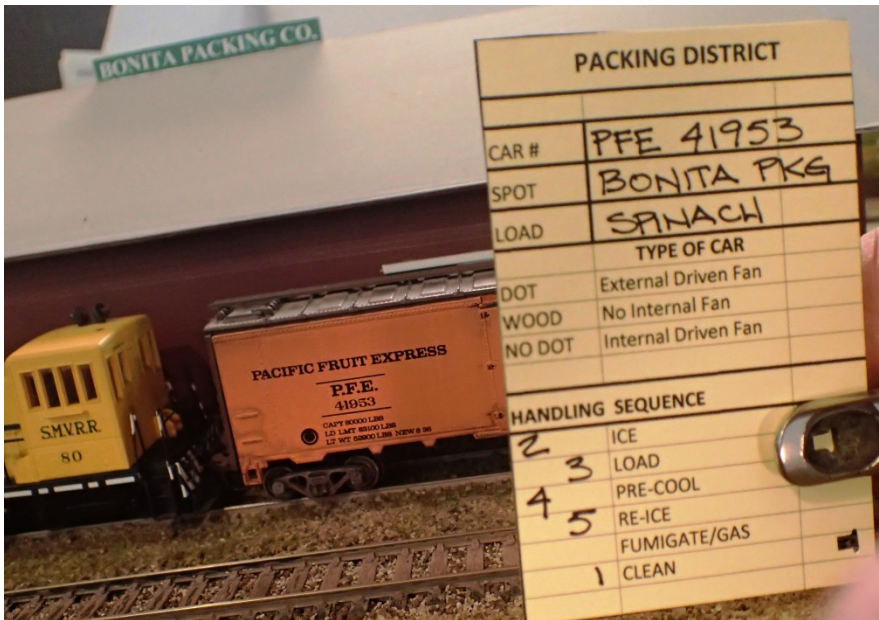
Here the car is spotted at the clean out track. When the car is spotted, according to the numbered sequence, the single use work card is punched, using an official railroad punch, from owner's collection. It is now that the crew will add the car identification and number. Again the number is added because the crew has identified which car they will use to fill the packing plants requirement. The car will sit for either a full or half shift depending on the discretion of the produce broker.

Once the car has been cleaned it is moved to step 2, icing the car. Notice the car number has been filled out on the work card and step one, cleaning, has been recorded by punching the appropriate spot.



#12

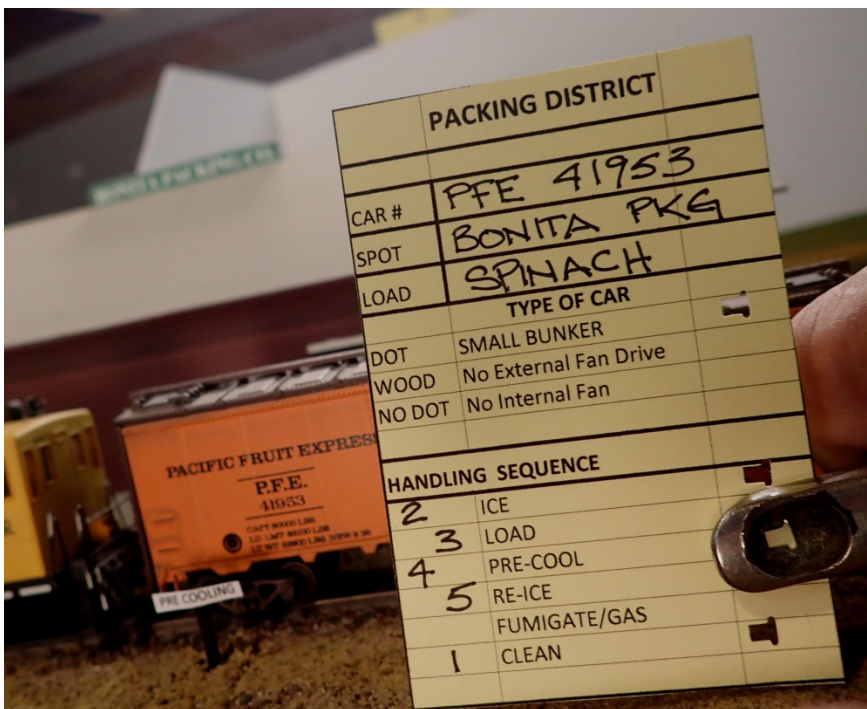
The more common method is the car would be loaded first then iced. Spinach is susceptible to heat so the car is cooled prior to loading. Icing of the car takes less than 15 minutes. (See photo of F&GE record book) Because it takes less than 15 minutes to ice a car, it is moved to the next step in one movement of in and out.



#13

The car is being spotted at Bonita. Notice that step two, ice has been punched. Again the car might take a half shift or full shift to be loaded prior to moving the car to the next step.

After the car is loaded the field heat and heat created by the plant needs to be removed. This is called pre-cooling the load prior to shipping. More durable produce would lose field heat during shipping; this used more ice during transit, therefore more cost to the shipper. For more delicate produce the quicker the field heat was removed the longer shelf life it would have at its destination. The side benefit, since it was pre cooled, it will required less ice during transit thus saving the shipper the cost of re-icing.



#14

At the pre-cooling track, the internal fans would circulate the air inside the car over the ice and lowering the temperature of the load. Once the spinach was at the predetermined temperature it would be moved back to the ice dock to have the ice bunkers topped off.



#15

Here is the loaded pre cooled car having the ice bunkers topped off prior to being added to an East bound reefer extra.

In this case we had 5 car movements' verses the 3 - set out/hold/pick up, of a standard freight car.

The refrigerator work cards are placed in a separate card box. During the session or at shift change the produce broker will manipulate the work cards for the next shift, picking which cars to be handled.



#16

Besides the spinach load, the other three in coming cars have to be spotted and each refrigerator car shown in the picture will have to be relocated, per the work card sequence. Once the refrigerator car has gone through the sequence of the work card it is moved to the marshaling yard for reassignment. Along with some general freight this keeps the packing district engineer busy for about 60 to 90 minutes.

In addition to preparing the car card way bills the broker holds a few empty cars in reserve. These will be assigned during the operating session depending on the competency of the crew and the cruelty of the produce broker.