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UNITED STATES DISTRICT COURT

FOR THE NORTHERN DISTRICT OF CALIFORNIA

SAN FRANCISCO DIVISION

ROBERT JACOBSEN, Plaintiff, v. MATTHEW KATZER, et al., Defendants.	No. C06-1905-JSW **DECLARATION OF JACK SHALL IN SUPPORT OF MOTION OF SUMMARY JUDGMENT** Courtroom: 11, 19th Floor Judge: Hon. Jeffrey S. White Date: Fri., December 4, 2009 Time: 9:00 a.m.

I, Jack Shall, have personal knowledge of the facts recited below. If called as a witness I could and would testify to the following.

1. I have written code for JMRI. In particular, I wrote the Lenz and NCE decoder definition files ("DDF") in versions of the Decoder Pro Software.

2. In writing these DDFs I did not simply cut and past "raw data" generated by the companies that make model train engines. Rather, I used my judgment in three distinct respects, each of which are reflected in the structure of the DDFs I wrote:

   A. I chose to extract certain data from manufacturer information and to disregard other data;

   B. I organized the extracted data using the JMRI template developed by Bob Jacobsen;

   C. And, within the structure created by this template I made choices regarding the presentation of data that reflected my judgment of what would work best with the rest of the JMRI program and what would be most useful to model railroaders who configure engines for which I wrote DDFs.

3. The net result of these choices is a file that expresses my understanding of how a decoder works and of the best way to present the decoder's functions to a railroader so the railroader can make it do what he wants it to do.

4. In order to understand these choices, it helps to understand the state of model railroad "programming" before JMRI began development. In those days manufacturers installed fairly simple decoder chips in their model train engines. These chips controlled train functions such as lighting, sound, speed, and direction. During this period model railroad decoders had relatively few variables, perhaps 30-40.

5. To program these chips, if you can call it that, a model railroader would use the controller box that ran the train layout. The box would generate a menu of functions. The railroader would then look at a manufacturer's manual or data sheet and see a series of values for each function. The railroader would then use a keypad on the controller to punch in the values he wanted for each function. The controller could not store these

settings. If for some reason the chip lost the data, the railroader had to punch in the numbers all over again.

6. At this time there was no user interface to speak of. The railroader simply punched in numbers one at a time. Sometimes the railroader had to go through trial and error because the manufacturer numbers were relatively uninformative. So, for example, a manufacturer might indicate that the brightness of a light could be set anywhere from 0 to 100. A railroader who wanted a pretty bright light might guess that 95 would work pretty well. He would punch in that number and then see what it produced. If it was not satisfactory, he had to go through a process of trial and error, playing with numbers to get the effect he wanted.

7. JMRI simplified this process by giving railroaders a user-friendly interface that would organize functions logically and make it easier for railroaders to make engines do what they want the engines to do. So, for example, a JMRI programmer might solve the trial-and-error problem mentioned above by giving the developer a slider to adjust the brightness of the light. JMRI also provides one program a railroader can use with engines made by many manufacturers, and a way to store settings in case of a glitch in the engine's decoder chip.

8. These functions are increasingly important to railroaders because decoder chips are becoming more complex. From the 30 or so variables they used to have, chips have evolved to the point where they may have up to 200 variables. If you imagine what it would be like having to punch in numbers for each of these variables, going through trial and error on each of them, you can see why JMRI is useful to model railroaders.

9. You can imagine the JMRI program as arranged vertically with the user interface on top, facing the user. The user interface is written to make things simple and easy for the

user to program a particular engine. Sometimes that means putting a slider in the interface, so the user can drag the brightness of a light up or down. Sometimes it means a value box where a user can enter a precise value. Sometimes it means a "radio button," which is either on or off. JMRI developers choose which presentation is best for the user, and those choices are reflected in the user interface.

10. The DDFs sit between the user interface and the decoder chips on the engines. The DDFs both present the user with an array of choices for how to control the engine and translate the users choices into instructions the decoder chips can implement. For this reason, the DDFs have to be arranged to work with the user interface. If they are not, they won't work properly.

11. This brings us back to the three types of choices mentioned above. In programming the Lenz and NCE decoders I did consult data from these manufacturers. In general, such data may be contained in a manual or a "data sheet" published by the manufacturer, or it may not be published but might be obtained by writing or talking to the manufacturer. But I did not simply copy these data and dump them in a DDF. However that might have worked in the old push-button controller days, it would not work with JMRI. Instead I reviewed the data and selected the data that I needed to enable a JMRI user to employ the user interface to program the engines.

12. These data include configuration variables (CVs) commonly employed by manufacturers. Years ago, the National Model Railroad Association developed some digital command and control standards. Engine manufacturers typically will use these NMRA standards to some extent (the standards allow for some manufacturer variation).

13. No manufacturer organizes its data—NMRA or otherwise--to work with JMRI. The selection and arrangement of data is done by individual JMRI programmers. To write a

DDF the JMRI developer has to spend considerable time deciding how to arrange this data to work with JMRI in a user-friendly way.

14. Because JMRI developers spend time making these choices, the DDFs in JMRI differ from what you would likely find if a railroader tried to use manufacturer data on their own. Most likely such a railroader would simply enter the manufacturer default data where indicated. The engine would not be optimized (it would not be able to do nearly what it would be capable of doing) and the resulting data structure would be different from JMRI DDFs. The difference is due to the choices of JMRI programmers.

I declare under penalty of perjury of the laws of the United States of America that the foregoing is true and correct.

Executed this 27TH day of October, 2009 at Denham Springs, Louisiana.

Jack Shall

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