THE NEW CCL

Concepts for the electrical circuits are taking shape in their final form now. The proposed Electrical Standards presented some months agoare serving as an outline for the final design. We've had written comment from only one person, Cmd'r Mitchell, on the way the system might otherwise go together. I plan to have it in form to present fro final approval at the Feb. meeting.

Meanwhile, some materials are being ordered. Recently had the opportunity to make a purchase of microswitches for controlling turnouts. These will have illuminated push buttons which when lit will indicate the route that is aligned and powered. In addition I'll be receiving some miniature rectifier diodes that are to be used across relay coils to kill the back emf. I have to buy a 1,000 of them to get a good price and won't need more than 400 to 600 so the balance will be available for sale to members at 10¢ each. They are good for use in directional and or constant lighting circuits etc.

I'm at a point in the electrical design where we have to make a decision on what the dispatchers job will consist of. It appears that that position as it presently functions is the least interesting and least popular of of any in the system. It was recently suggested in a letter or editorial that there may be ways to make that job more interesting and more like the prototype. One way, and the most important is to give turnout control to the train crew. It will then be the responsibiltiy of the engineers to determine which engine takes the main and which the siding when a meet occurs. Responsibility for a workable time table, originating specific trains, road switching, meets, routes and crew assignments would be the dispatchers job.

You can see that this concept would have a major affect on control and wiring plans. Another point to consider is why does the dispatcherhave to be buried? The display panel he requires is worth quite a few $. Why not locate him back upstairs with the main line cabs? Then he can watch the main display panel to see where the trains are and his panel would indicate direction, destination, class and leave room for crew assignment, telephone and asprin!

Wot say?

Kit

THE NEW CCL

Concepts for the electrical circuits are taking shape in their final form now. The proposed Electrical Standards presented some months agoare serving as an outline for the final design. We've had written comment from only one person, Cmd'r Mitchell, on the way the system might otherwise go together. I plan to have it in form to present fro final approval at the Feb. meeting.

Meanwhile, some materials are being ordered. Recently had the opportunity to make a purchase of microswitches for controlling turnouts. These will have illuminated push buttons which when lit will indicate the route that is aligned and powered. In addition I'll be receiving some miniature rectifier diodes that are to be used across relay coils to kill the back emf. I have to buy a 1,000 of them to get a good price and won't need more than 400 to 600 so the balance will be available for sale to members at 10¢ each. They are good for use in directional and or constant lighting circuits etc.

I'm at a point in the electrical design where we have to make a decision on what the dispatchers job will consist of. It appears that that position as it presently functions is the least interesting and least popular of of any in the system. It was recently suggested in a letter or editorial that there may be ways to make that job more interesting and more like the prototype. One way, and the most important is to give turnout control to the train crew. It will then be the responsibiltiy of the engineers to determine which engine takes the main and which the siding when a meet occurs. Responsibility for a workable time table, originating specific trains, road switching, meets, routes and crew assignments would be the dispatchers job.

You can see that this concept would have a major affect on control and wiring plans. Another point to consider is why does the dispatcherhave to be buried? The display panel he requires is worth quite a few $. Why not locate him back upstairs with the main line cabs? Then he can watch the main display panel to see where the trains are and his panel would indicate direction, destination, class and leave room for crew assignment, telephone and asprin!

Wot say?

Kit

FLEET AIR WING ONE
DET NAHA
FPO SEATTLE 98770
31 Mar 74

You asked for it, Kit ...
... so here are some comments --- good, bad, indifferent, and serious --- on the electrical system specs. The comments are keyed to the numbering in that neat little spec sheet you sent.

A:2) Rather than having the one master switch not accessible to the visitor viewing area, wouldn't it be better to locate the switch in any area with ready access but make provisions so that the switch cannot be operated by unauthorized persons?

B:1) The requirements for special effects lighting to be incadescent and to be controlled by SCR dimmers both seem to be unduly restrictive. For example, part of the night lighting on the G&D used flourescent black lights to achieve the desired effect --- at much less cost and greater effectiveness than incadescent lamps and/or individual miniature lights in all the buildings, lamposts, etc. And , while SCR controls can do the job, there are other methods too. As a matter of philosophy, wouldn't it be better to specify the end results desired rather than specifying the particular equipment used to achieve them? P.S. - the idea for separate line cords and plugs seems ideal in terms of ultimate flexibility, but how about costs and weights being hung from the ceiling? I note that Sears, etc, are now offering "light bar" type installations which might do equally as well.

B:4) Why prescribe the 4' and '8' dimensions prior to finalization of the layout design? Convenience of access would seem the better spec for these outlets. Again, this is a matter of philosophy. Presumably the specs will almost all be in the form of guidelines rather than rigid laws which would require inspection, policing, and enforcement apparatae to be set up.

C:1)a- Add: "the other track rail or the overhead catenary will be used to distribute train control power." Note that something along this line is required to insure that trains on the electric system will operate the block occupancy signals et al. If this is too complicated (i.e., it requires the catenary to be gapped and insulated), then a requirement for catenary operated engines to have a bypass resistor to the common rail must be issued when the catenary is used as an alternate common power feed. BYPASS RESISTOR MAY BE REQUIRED IN ANY CASE, DEPENDING ON WIRING OF DETECTION SYSTEM.

C:1)b- Here again wouldn't it better to specified the desired performance? 12Vdc is what is desired at the rail, not at the power pack, and the 12V should be delivered at full (or other specified) load conditions. I note that the use of the word "source" seems to require that there will be one central power supply, which in turn seems to eliminate multiple power supplies. That latter might be very attractive in the event that different types of electronic controls are used.

C:1)c- The spec of a "transistor" control is again believed to be much too restrictive, both in terms of what types of electronic components are, and might become, availble; and in terms of expense. For example, Opamp units might have some applicability; SCR's are useful in some operations; and from my experience, the Mallery poor man's transistor

FLEET AIR WING ONE
DET NAHA
FPO SEATTLE 98770

gives more than adequate low speed control at less cost, complexity, and fragility than transistor controls in yard areas. This is nothing but a regular rheostat bridged by a capacitor --- you ought to compare it's operation vs. a conventional rheostat, a variable transformer, and a transistor throttle. I got down to something like 22 minutes to traverse an inch with one of my engines utilizing this method of control.

C:1)d- Once more, performance specs vice particular methodology would seem preferrable. Desired is, "Control power will be delived from the cabs to the train in such a manner that the first cab to control a train will lock out all others from controlling that train. Additionally, such a system will activate indicators to show which controller has control of each train." Note that this specifically does not refer to blocks. The simplest illustration for this is in the electric engine territory, where the presence of an alternate power path through the catenary allows more than one engine to be in a block independently controlled from each other. Other examples of reasons for the alternate wording are that solid state devices may be better than relays, and that the original wording may not be compatable with more exotic methods of control that seem reasonably practicable at the present state of the art --- such as cordless walkaround controllers with automatic latch on to the train capabilities.

C:1)e- I'm not in full agreement with this because it impacts on the operating scheme. It may be O.K., but I prefer a setup where the control of the mainline is at the designation of some mainline authority rather than at the local position. The mainline authority can be either the engineer or the dispatcher. This way, if the layout is to be operated for continuous running, only one location is required to be checked to insure that everything is lined up, and there is no worry about local operators forgetting to line things up --- or changing things at inauspicious times. Within yard and local on line switching areas, there is no quibble that the local operator/control should make the determination of which track is controlled by who.

C:2)a- Kemtron/tenshodo too specific. Better would be a requirement deliniating type (two coil) and number of contacts required. Likewise, it would seem that machines for use in the yards/switching areas wouldn't need the contacts, and maybe not the performance, required for machines on the mainline.

C:2)c & d - these specs seem to overlook the use of route control by diode matrices. If you havn't tried these yet on the CCL, you're missing a big boost to operation, and one that is quite inexpensive. See Random thoughts for last Oct. We're using surplus diodes at a cost of less than 4¢ apiece after they're culled out, and KD type buttons for route selection in conjunction with a good quality master power throw button. Also, since as many as 6 machines are in some of our routes, were use a capacitor discharge supply --- much over 15V. If you must have a voltage spec, it should be in terms of what hits at the machine coils per se under conditions exacting the toughest demands on the power supply.

C:3) Of all the comm systems available, the handset and buzzer has to be among the worst. From a psychological standpoint, it is most annoying either to the caller, who gets frustrated when no one answers, or to the callee, who has to put up with that irritating buzz no matter where he's at or what he's doing. Likewise, it has it's physiological drawbacks in that it demands the use of at least one hand and the presence of one ear within range of the handset cord's furthest extension. If you have to talk with each other that much (a questionable premise in itself), go to the headset and boom mike hot-wire system that requires no hands for operation of either the mike or the callup buttons. Everybody is presumed to be on the line, so the caller simply says, "Cab 7, this is Dispatcher", to make a call.

Better yet, why not operated like a real rr? Use on line trackside signals to communicate operating information to walkaround engineers. Or, try train order boards at appropriate stations to indicate that engineers should stop their trains and phone the dispatcher for orders. As a partial compromise, try the following during current operations: disconnect the buzzers to the balcony cabs and institute a rule that the engineers are to pick up the fone and announce their cab # anytime they have something to say, or are stopped for a signal/derailment/ etc. The engineers will listen, ONLY, continuously on their handset until the dispatcher acknowledges them and/or gives them a message. Note that, if coupled with the mainline control of mainline tracks, this would eliminate many of the hassles re operation at Jimtown.

You'd have a hard time swinging me away from an opinion (not known fact) that the combination of walkaround control and trackside signals is the best system you could have on the new CCL.

C:4) This seems overly redundant and overly costly, especially if a decision is (as it should be) made to go to trackside signals. If the decision is made to stay with the balcony cabs for other than show operation, consider what I have railed against before. The present system requires the engineer to manipulate controls on the panel in front of him, watch the master occupancy board, and watch his train all simultaneously. Need further be said about the obvious built in conflicts which almost guarantee that something will be done wrong during operations?

Likewise, the amount of information presented seems open to question as far as usefulness and need. Do you really need to know which cab has the block and which direction the block is powered in, or are these merely tastes acquired from the (rather haphazard) method in which the present CCL is "operated"? Especially if any online car switching is contemplated, the flashing of various direction indications seems superfluous if not actually confusing. And even real rr's don't have automatic train # indicators on their occupancy indicator boards, although I will grant you that model rr's have higher density of operations. And why, for instance, do turnout indications have to have red and green lights when the desired information is the position of the route --- which can be determined from the position of the lighted indications?

Some things weren't addressed in your specs, which admittedly are labeled "I-WIRING STANDARDS" implying that there is more to come. How about such things as current capacity or resistance of the wire for various functions? And the quality/lack of resistance in wire joints and splices? And the lack of exposure of bare wires carrying over x watts, volts, amps, or what have you? And LABELING OF WIRES, and a standized system therefore?! And possible color coding of wire purpose? And the provision of wiring diagrams for ALL wiring incorporated in the layout? And standardization of terminal blocks? And voltage/amperage/wattage specs for signal lights and other lights in the layout per se? AND FOR THEIR POWER SUPPLIES?

All this has been rather much, I fear, in response to your specs, so I hope that it doesn't turn you off because of the volume or because it is interpreted as criticism. I'm trying to play the Devil's advocate from afar, which has it's limitations. Hopefully there are some suggestions which you'll select as having merit for further consideration. Thanks for taking the time to send me a copy of the specs.

Best,

Tom

PS. Don't have the specific freqs Dick Dolbec works as he indicated he varies throughout the whole band. He does have your phone number, however, in case he contacts somebody else in the general area. Maybe you have some set freqs in mind?

PPS. Another bit of philosophy after rereading this epistle. As more and more things are done by the control system, less is demanded of the operators and , sometimes, less confusion is possible. But the more functions demanded of the control system, the more sophisticated it must be. This, in turn, puts more and more demands on the system designer and on the maintainers. The designer doesn't have too much of a problem once the bugs are worked out, especially if he's done a good job of breadboarding and working the design out ahead of installation. The maintainers, though, will always be with us. Their problem will be related to both the design of the system and the design and performance of the components.

The point is that there is a tradeoff between automation of the operators' functions and the requirements for maintenance. Good design and good components can ease the maintainers' work, but in any case everyone should be aware that there is always some tradeoff --- automation does not come for nothing.