The Common Methods of Fh98 Digital Control System’s Fault Treatment

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Abstract. FH98 digital scheduling system can realize the functions of centralized monitoring, remote maintenance, fault diagnosis, and environmental monitoring, etc. so that the remote equipment can be attended. In this way, railway scheduling, station and station communication can adapt to the future development of railway communication. This paper describes the common faults and processing methods of application of FH98 digital dispatching system.

Introduction

Scheduling system which is used by railway station is Beijing Jiaxun Company’s FH 98 railway dedicated digital dispatching communication system. Beijing Jiaxun digital dispatch system consider modern communication technology and computer technology as a platform, not only can achieve the railway communication basic business functions, but also can realize the function of centralized monitoring, remote maintenance, fault diagnosis and dynamic environment monitoring. As a result, the remote equipment can be attended and railway scheduling, station and station communication can adapt to the future development of railway communication. This paper introduces briefly some common faults and processing methods which encountered in daily maintenance.

1. The unified process of various fault handling

1.1 Understanding of the phenomenon of failure in a detail

The most direct response to the failure phenomenon is the station attendant or end users because they can understand more about the situation. When the phone is received, we should be careful about the use of the site.[1]

1.2 The analysis of fault and processing method

So as to have a definite object in view, we should analysis fault point what is in the front desk or background and software (data) error or hardware (panel) damage. So we can decide to do the telephone guidance or the scene processing according to the decision of the fault point processing method.[2]

2. The method of the common troubleshooting

2.1 USB port plate (duty) to deal with:

Example: A station attendant reflects counter (duty) cannot be used.
2.1.1 To understand the failure phenomenon

As asked whether the attendant at the front desk had electricity;
If there is electricity communication light flashing reception is normal;

If one of the normal business rings back.

2.1.2 Failure analysis and processing method

If there is electricity, explain the background, a total of no problem; If no, explain the background of power supply has a problem or junction box has a problem, or the front desk and there is something wrong with the connector plug (unlikely), should prepare tools to deal with the on-site inspection, had better take a junction box.

If the communication light flashing at the front desk is normal, the foreground and background communication is normal, not the hardware or hardware connection issue; If communication light flashing abnormal (communication or flashing lights are faster), then is 2 b + D line (the foreground and the background is a problem with the communication lines) or data has a problem, should be please dispatch work area maintenance personnel on duty again the table data transfer; Such as is not normal, should prepare tools to deal with the scene, had better take a front and a terminal box.

If the first two works, press a button test business, if it have back tone (regardless of the length) but not call out of the user, then data is normal, is likely to be outside or to end users' questions, make corresponding processing; If no back tone or buttons to green light out soon, is the data problems, should please relevant scheduling work area maintenance personnel to check whether the data is correct. [3]

2.2 USB PORT - H slab fault handling:

Example: electric adjustable attendant reflect the phone can't use.

2.2.1 To understand the failure phenomenon

Ask the user phone whether there is electricity.

If there is electricity, you can hear noise.

2.2.2 Failure analysis and processing method

If the phone without electricity, it suggests that there is a power failure or the phone itself, outside connection problem is less likely, should prepare tools to deal with the on-site inspection, it had better take a digital telephone set and a transformer.

If there is electricity, can hear busy or no voice, the show is the data issue, please dispatch work area maintenance personnel to check whether the data is correct.

2.3 User board (panels) in fault handling:

Example: a yard user cannot use.

2.3.1 To understand the failure phenomenon

Ask the user phone whether there is electricity.

If there is electricity, you can hear noises.

2.3.2 Failure analysis and processing method

If the phone without electricity, explain road there was a problem this user is the user plate have fault, outside connection or the unit itself) are less likely to have a problem, can let the scheduling work area maintenance personnel to reset this user board; If can't recover, should prepare tools to deal with the scene, had better take a user board.

If there is electricity, explain this user board, outside connection is no problem; Can hear a busy signal or no sound, is the problem of data, please dispatch work area maintenance personnel to check whether the data is correct.

Note: The user above board provides other business to deal with.

2.4 Fault handling of pick board: example: station attendant reflected that they can't speak with the dispatch using the simulation scheduling buttons.

2.4.1 Understanding fault phenomenon and inquiring station attendant to press the buttons,
observing whether the green light of the button is normally on.

2.4.2 Analyzing fault and processing:

Data is out of the question if the buttons is not normally on, please dispatch work area maintenance personnel to check whether the data is correct; if this button is normally on, it is very likely that the pick of this road has a problem, you should prepare tools to deal with the on-site inspection. You'd better have a pick board as backup and the road can be jumped to the other way to test whether pick board is failure. Fault handling of interface board-6: because the board need to be installed the other board. Only in this way, the board would be meaningful. Therefore, you only need to observe the status of communication light and running lights in this board is normal.[4]

2.5 Fault handling of divided board:

Because the interface features of the board does not provide a voltage, you can make scheduling work area maintenance personnel to check the data or reset interface board when judging failure, if it can not recover, you can prepare a divided board to debugging with replacing method.

2.6 Fault handling of magnet board:

Because interface features of the board is sending and receiving of fluid flow, it can normal communication only if the transceiver can measure fluid flow. Otherwise it should be data problem or hardware problem, please bring a magnet board to replace.

2.7 Fault handling of the foreground noise caused by digital board:

Example: the resolution of problem the station reflected the foreground have extremely slight noise: reset U inspection panel, fault is still. You can find a digital audio alarm by checking carefully, so to replace the digital board.

2.8 Fault handling of electrically controlled engine:

Example: the electrically controlled engine give out the “beep” and sometimes some voice may lack. The solution: debugging second-line callback interface level, if it is not ideal, you can consider trying to solve by combining the small resistance from the perimeter and try to solve.

2.9 Two logging desk of the station should all ring to process when the simulation scheduling switchboard calls the station:

Example: when the simulation scheduling switchboard call the station, two logging desk of the station both ring who first pick machine who first talk to each other if there are simulation scheduling operations.

The solution: classify the select port of system ,two logging desk of the station can be made to entrance different select port to solve the problem.

2.10 Fault handling of “Message channel is passable, voice channel is impassable”:

Example: main logging desk of signal cabin have a electrical modulation in the station’s digital project, it would appear the phenomenon “Message channel is passable, voice channel is impassable” if we make data in accordance with the methods to solve the scheduling of extension.

The solution: the phenomenon remains if we exchange a slot time in a side of the station. You should observe repeatedly to compare directional light of number plate and the main system digital board, and you would find that 2M of 1th, 2th is backwards, it could call after transferring.

2.11 Fault handling of “Hanging constantly” when dispatch calls the logging desk:

Example: hanging constantly when dispatch and station users call the logging desk (press a few times can hang up), but with a ring is broken.

The solution: the result is still the same if you master switch board first. To transfer data again is the same; then you can use emergency extension for work instead of the foreground (to see if the
problem is the front desk), the result is good, we can judge the problem from U mouth, which is solved replace other U mouth.

2.12 Fault handling to automatic ringing of logging desk button:

Example: we found that simulation station in the logging desk is block and button frequently appear automatic ring in between station phenomenon in the process of opening digital regulation. There is no reflection after picking up (it is proved that it is not subsystem failure).

Processing: the first you can do is to determine automatic ringing is caused by which two station’s block line between that simulation stations. When faults happen go with ringing, you disconnect on both sides of the perimeter, if the fault phenomenon disappear you can determine it is caused by which side of the perimeter. You can put a multimeter lap on the cable to measure to determine it is caused by which side of the perimeter cable, you can find a voltage appearing on the cable after 3 hours. On the line of electrified railway, there would have the voltage on the cable for various reasons, magnetic slab of digital dispatching will be started automatically after receiving voltage. After the reason of the phenomenon can be found out, you put isolation transformer on cable road and isolate the voltage of the cable to solve problem.[5]

2.13 Ringing fault handling on duty stations

Example: Tree users on duty stations electric bell often ring by itself I, answered after no response. Processing: we start to think that there may be the outside line, so we replace a pair of outside. But the result is still the same. After property test on the line, single line to ground insulation is good, and the line impedance between 50 m or so. Then we think the line is good. Because the panels had been used up, and we found that the three ring users are answered on the interface board of the total electricity board. Change electricity board test one day, we found fault is still. Results after replace the interface board is also no change. It showed that interface board and common battery board is good. Due to the use of common battery plate, we think that electric flash board may lead to failure. After the replacement of common electric flash board users for common panels, and do experiments for two days. It have not disoperation phenomenon, and the trouble is solved. Summed up panels after the impedance characteristics of exterior requirements and common battery board is not the same. If the user and the system cable connection is closer, there is no greater impact, but the perimeter is more than 2 kilometers above the fault appears.

Summary

Above are common fault examples in daily life. Different conditions have different methods. It can provides reference for the similar faults, and have certain reference function for fault handling in future.

References

[2] Li Chunmei, Maintenance and fault processing of FH98 digital communication system, Taiyuan Railway Science and technology, 2009-09.