Weekly Progress Report

WPR005
OKI Toshiyuki
2004/06/11

1. Steve Stoneham, Steve Warner and I discussed the power distribution in MICE hall, as shown in below.

The 50A input current of a filament power supply for 4648 tube, which is suggested by Yoshiro, seems to be over-estimation. 4V - 1440A is required by the tube used in ISIS RF system, and the current is supplied by same transformer whose input voltage is 240V. So the voltage ratio between input and output is 60:1, and the input current is estimated as only 24A (= 1440 / 60). Even if 1650A of output current is required as it was used in KEK, the input current is estimated as only 27.5A. On the other hand, the 50A input current of a filament power supply for 1643J2 tube also seems to be over-estimation. The voltage ratio between input and output of a transformer is 17:1, because 14V - 555A of output is produced by 240V input. So the input current is estimated as only 32.4A (= 555 / 14). It should be discussed whether the input current for these filament power supplies is over-estimation or is reasonable. The 50A input current, however, can be supplied by using “motor circuit fuse 32M50” whose size is same as 32A fuse.

Changing a tap on the 3 phase 11 kV - 415V step-down transformer, we tried to reduce the actual 440V voltage to 400V. In the results, it was reduced to only 420V for no load. If this power line is loaded, this 420V may become 410V, probably. Although this 420V is enough lower for 3 phase 400V equipments, this is not enough low for single phase 200V equipments. That is, 242V (= 420V / √ 3) is still too high. We will need 30 KVA transformer for single phase 200V system including 3 phase 200V system, and Steve start to prepare for it.

There are some differences between UK and Japan in the power distribution system. Namely, "3 phase - 4 wiring system" is used in UK, which has RED-YELLOW-BLUE-Neutral (BLACK) -GREEN and YELLOW power lines due to star connection. RED (or YELLOW/BLUE) and Neutral produce single phase power system. Therefore, these power lines should be distinguished each other: one is "hot", and the other is "nearly ground". On the other hand, "3 phase - 3 wiring system" is used in Japan (KEK), which has RED (R / U) - BLUE (S / V) - BLACK (T / W) power lines due to delta connection. There was no Neutral in KEK test bench, so that we did not use neutral lines for 3 phase system. Furthermore we did not distinguish between two power lines for single phase system in Japan. It should be discuss how to arrange these differences.

2. Drilled 245 holes on the steel frames of RF chassis have been tapped.