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Detailed Calculations of Kipling Complex High Current Lab Estimated Loads

Existing installation:

No metering at the primary or secondary side of HCL substation. The HCL building itself is already metered by the building power supplies.

The following is an estimate based on historical data and the test records available to date. A detailed log of actual usage is not maintained but can be estimated from the test records on file.

As soon as possible, the acquisition systems will be modified to automatically maintain an electronic usage log for the HCL.

Usage:

From test records, the number of tests performed between Jan 1 and July 31, 2003 is approximately 1813. The following is an estimate of the power consumption based on the distribution of test levels. The figures used to calculate the usage are the high end of the MVA and the duration for each range.

Range 1: 1650 tests at 10-20 MVA, 0.5 sec momentary tests = $1650 \times 20\text{MVA} \times 0.5 / 3600 = 4.6 \text{ MWh}$

Range 2: 100 tests 20-50 MVA, 0.5 sec momentary tests = $100 \times 50 \text{ MVA} \times 0.5 / 3600 = 0.7 \text{ MWh}$

Range 3: 63 tests 50 to 75 MVA, 0.25 sec momentary test = $63 \times 75 \text{ MVA} \times 0.25 / 3600 = 0.3 \text{ MWh}$

Total consumption is estimated at about 5.6 MWh for the first 7 months of 2003. An estimate of the yearly consumption for 2003 is $5.6 / 7 \times 12 = 9.6 \text{ MWh}$.

To account for uncertainty in the type of tests performed from year to year, a margin factor of two times (2x) is used. This increases the planned consumption to $9.6 \times 2 \approx 20 \text{ MWh}$

An actual account of the power used using actual test figures will be maintained starting in September 2003 and made available upon request.

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