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INTERPRETATION OF LICENSED POWER LIMITS

We have observed that licenses for various reactor facilities are written with different statements regarding licensed power levels. For example "_____ is authorized to operate the facility at steady state power levels up to a maximum of 1520 megawatts (thermal)". In the same license, the following paragraph states in part "_____ shall operate the facility at power levels up to 1520 megawatts (thermal) in accordance with the Technical Specifications". Another license states "This amendment authorizes operation of Unit 2 of the _____ power station at steady state reactor core power levels not to exceed 3293 megawatts thermal, (100% of rated power) in accordance with the Technical Specifications attached . . .". Still another license reads "_____ is authorized to operate _____ Unit No. 1 continuously at power levels not in excess of 2260 megawatts (thermal), 90% of the rated power level of Unit No. 1". Another license reads "The licensee is authorized to operate the facility at steady state reactor core power levels not in excess of 3293 megawatts thermal". (Underscoring has been added in all cases.) We do not know whether any significance should be attached to the different statements or whether the statements should be interpreted to mean the same thing.

If it is assumed that the wording of the statement of licensed power level is significant then the different statements lead to a problem when one attempts to decide whether operation "at steady state power levels up to a maximum of 1520 megawatts (thermal)" implies that a licensee can operate at a nominal level of 1520 megawatts (thermal) with some allowable swings above that level or whether 1520 megawatts represents the actual maximum authorized power level. If the licensed power level is to be interpreted as a nominal steady state value, then some guidance is needed as to the allowable magnitude of deviation above such nominal values, both in terms of power and time. That is, swings of 1-5 megawatts above the nominal value for periods of a shift may be tolerable, while operation at 5 or more megawatts above the nominal value for more than an hour or half hour may be unacceptable.

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There is a similar problem when the licensee is authorized to operate at steady state reactor core power levels not in excess of 3293 megawatts thermal. Again, this implies that power fluctuations about 3293 megawatts are acceptable, but the magnitude of fluctuations is not specified. The use of "core power" is also not specific because there is presently no direct method for measuring "core power". It can only be determined from heat balance calculations which are used to provide a relationship to nuclear detector measurements.

There are apparently at least three different reasons for specifying the authorized power level in a license. These are as follows:

1. Provide a basis for levying license fees. In this case, specifying a nominal maximum authorized power level would appear to be sufficient.
2. Provide a basis for accident analysis, i.e., fission product inventory. In this case, specifying a nominal value with an upper limit and a time limit for operation above the nominal value would appear to be required.
3. Provide a basis for operational safety limits. In this case, a number of different situations must be evaluated to determine the limiting value. While this value should be consistent with 1. and 2. above, these limits on power level are more appropriately specified in the Technical Specifications.

We believe it would be advisable to develop a more precise specification or statement for the licensed power level and to use that statement uniformly. We suggest that something along the lines of the following would be appropriate:

"_____ is authorized to operate the facility at power levels up to a nominal level of 2000 megawatts thermal. Thermal power level as used here is that power level determined by heat balance calculations, with contributions from sources other than the reactor core (pump heat, etc.) appropriately subtracted. In no case is the power level to exceed 2020 megawatts thermal and operation at greater than 2000 megawatts thermal for more than 8 hours in any 24 hour period is not permitted by this license." (The numbers will need to be specific for each facility to provide reasonable ranges, but the statement should be uniform for all facilities.)

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until a more precise statement of licensed power level can be agreed upon, guidance is required in the interpretation of the statements in the areas discussed above. We would appreciate your assistance in this matter.

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