**Nuclear Safety Goals**

1.1 *Safety goals* are numerical safety criteria to be used in association with *PRA* applications and against which the safety of nuclear reactors can be judged. The intent is to ensure the radiological *risks* arising from nuclear accidents associated with operation of nuclear reactors will be low in comparison to *risks* to which the public is normally exposed. The *safety goals* outlined below are comparable to industry best practice.

| Safety Goal | Average Risk (per year) | | Instantaneous Risk (per year) |
|---|---|---|---|
| | Target | Limit | Limit |
| Latent Effects (per site) | $10^{-5}$ | $10^{-4}$ | N/A |
| Large Off-Site Release (per unit) | $10^{-6}$ | $10^{-5}$ | $3 \times 10^{-5}$ |
| Severe Core Damage (per unit) | $10^{-5}$ | $10^{-4}$ | $3 \times 10^{-4}$ |

1.2 The safety goal limit represents the limit of tolerability of *risk* exposure above which action shall be taken to reduce *risk*. The safety goal target represents the desired objective towards which the facility should strive, provided that measures to further reduce *risk* are cost-effective, such as when benefits are comparable to, or greater than, the cost of implementing the measure. It is unlikely that *risk* reduction better than target would be cost effective, so further measures to reduce *risk* are not required.

1.3 The *safety goals* pertaining to *Severe Core Damage* are intended to help the station make routine decisions relating to changes in plant operation, configuration or procedures. For proposed changes significantly affecting the integrity of containment, either directly or through crosslink, a further assessment against *the Large Off-Site Release* is required. As a further confirmation, the safety goal pertaining to *Latent Effects* is calculated whenever the *PRA* is updated and is intended to confirm that the *risk* to public health remains within acceptable bounds.

1.4 *Risk* based *safety goals* apply to estimated *risk* averaged over time, typically one year. This implies that it is permissible for the *risk* to exceed the limit for a short period of time provided that the average *risk* remains below the limit. To ensure that reasonable bounds are placed on the allowable short-term *risk*, an instantaneous limit has been defined. As there is no strong international consensus for instantaneous *risk* limits, engineering judgment is integral to their application: where instantaneous *risk* limits are exceeded, the acceptability of the *risk* should be demonstrated using other considerations, such as whether the benefit of the activity is comparable to, or exceeds, the *risk*.

1.5 When any safety goal instantaneous *risk* limit is exceeded, continued operation of the plant shall be approved by the Chief Nuclear Engineer and the Director of Operations and Maintenance.

Where any *safety goal* average *risk* limit is exceeded, action shall be taken to reduce the *risk*.

If the *risk* cannot be returned to an acceptable level, the Chief Nuclear Engineer and the Director of Operations and Maintenance shall direct the immediate and orderly shutdown of the affected units or stations.