



# FACT SHEET

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## Plant Safety Performance After the TMI-2 Accident

The accident at the Three Mile Island Unit 2 (TMI-2) nuclear power plant near Middletown, Pa., on March 28, 1979, had the greatest impact on nuclear regulation of any single event in history. Although there were no deaths or injuries, the accident is a reminder for the NRC and those who operate plants to remain vigilant in watching over the 104 operating reactors in the United States to ensure their safe operation.

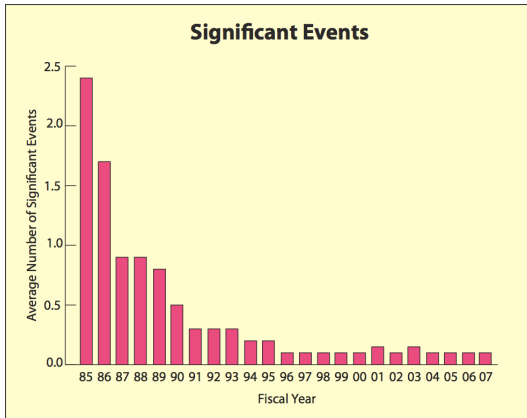
Since the accident, there have been substantial regulatory changes and other improvements that have contributed to making nuclear plants operate safer and better today. Some of the major changes that have strengthened NRC's regulation of public health and safety include placement of at least two NRC resident inspectors at each plant site, immediate NRC notification by plants of serious events, expanded emergency preparedness including an NRC Operations Center staffed 24/7, increased identification, analysis and publication of plant performance information, and recognizing human performance as a critical component of plant safety.

Key indicators of plant safety performance have improved dramatically, as indicated in the charts below. They show:

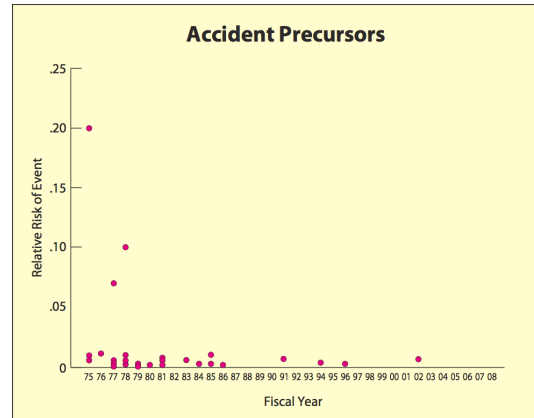
- The average number of significant reactor events over the past 20 years has dropped to nearly zero.
- Today there are far fewer, much less frequent and lower risk events that could lead to a reactor core damage.
- The average number of times safety systems have had to be activated is about one-tenth of what it was 22 years ago.
- Radiation exposure levels to plant workers has steadily decreased to about one-sixth of the 1985 exposure levels and are well below federal limits.
- The average number of unplanned reactor shutdowns has decreased by nearly ten-fold. In 2007 there were about 02 shutdowns compared to about 530 shutdowns in 1985.

# Trends in Nuclear Plant Performance

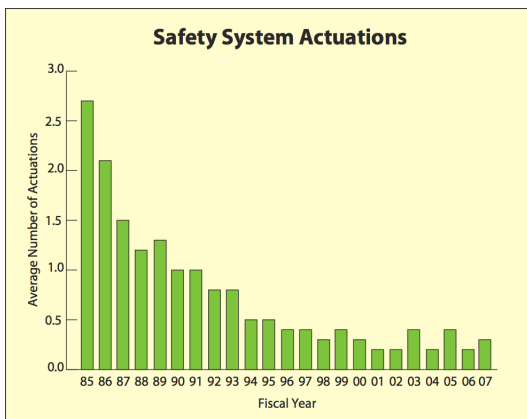
There has been a significant increase in the safe operation of over 100 nuclear power plants over the past couple of decades. These charts depict those indicators of reactor performance the NRC uses to help monitor the operational safety of nuclear plants. In general, safety has increased and problems have decreased. Since the Three Mile Island accident in 1979, the agency has enhanced and sharpened its regulatory tools and requirements to ensure safe plant operation. The results can be seen clearly in the following charts.



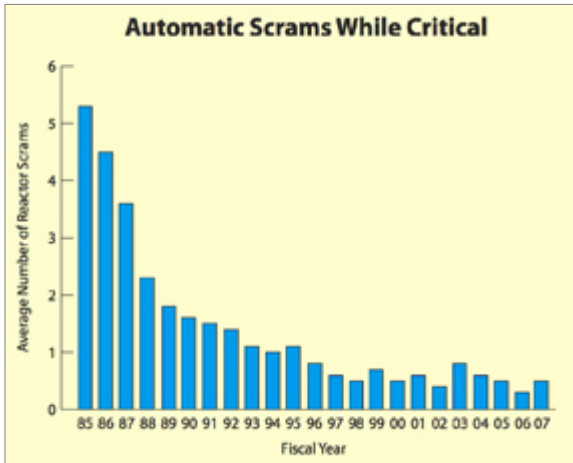
**Significant Events** - This chart shows that the number of significant events at each operating reactor has dramatically decreased from almost 2.5 events per plant in 1985 down to 0.1 events per plant in 2007. Significant events are those events that have serious safety implications and include degraded safety equipment, a reactor shutdown with complications, an unexpected response to a change in a plant parameter, or a degraded fuel rod or coolant piping. Significant events are determined through detailed screening and evaluation of operating experience.



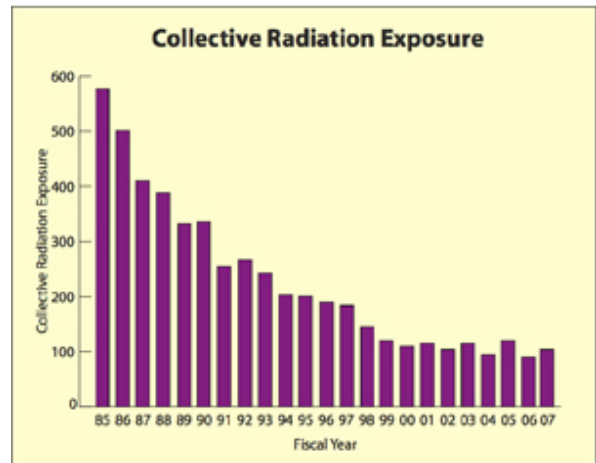
**Accident Precursors** - NRC analyzes those events at plants that could lead to an accident where the reactor core melts as it did in the Three Mile Island Accident. A risk is assigned to each event relative to it leading to an accident. For example, risk of 0.001 means that the event has a 1 in 1,000 chance of causing core damage. The data above show that over the years, these events have become much less frequent and less risky. This is due to many changes put in place to avoid these events in the future or to lessen the impact of such events should they occur.



**Safety Systems Actuations** - Safety systems in a nuclear plant are activated either automatically or manually to deal with a problem detected in the reactor. Since 1985, there have been dramatically fewer activations of safety systems indicating fewer safety-related problems occurring in reactors. The average number of actuations is determined by dividing the total number of actuations occurring at operating reactors in any given year by the total number of operating plants in the fleet (~104). For example, in FY 2007, there were about 25 safety system actuations – far less than one per plant.



**Automatic Scrams While Critical** - A nuclear plant is designed to automatically shut down (scram) if a safety problem is detected while operating. This chart shows the average number of scrams has decreased dramatically over the past 20 years, indicating far fewer safety problems in plant operations. In FY 2007, there were about 50 unplanned scrams among 104 operating plants compared to over 500 scrams in 1985.



**Collective Radiation Exposure** - Total radiation dose accumulated by nuclear plant workers has decreased to less than 20 percent of the doses in 1985. In 2007, those workers receiving a measurable dose of radiation received about 0.1 rem (rem is a unit that measures the amount of radiation absorbed by the human body). For comparison purposes, the average U.S. citizen receives 0.3 rem of radiation each year from natural sources in the environment.

Other TMI-related information can be found in the TMI Fact Sheet: <http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/3mile-isle.html>.

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