Amounts of water injection assumed in MAAP analysis for Unit-3

[Condition for the water injection rate in the current MAAP analysis (Attachment 3)]

In the current analysis, the water injection rate by the reactor isolation core cooling system (RCIC) or the high pressure core injection system (HPCI) to the reactor were set so that the reactor water level measured could be more or less simulated. Furthermore, a possibility of insufficient water injection to the reactor due to insufficient driving power before the HPCI was manually stopped was also considered when setting the amounts of water injected to the reactor (Attachment 3-3).

At first, operators changed HPCI line configuration where discharged water would pass through both the reactor injection and test line so that part of the water was returned to the condensate storage tank (CST), water source of HPCI. After the start-up of HPCI, the reactor pressure started to decrease and finally lowered below 1MPa[gage], its operational range of HPCI steam design, and reached 0.8MPa[gage]. It is suggested that HPCI could not inject water into reactor due to lack of driven steam pressure and almost all of the discharged water would flow into the CST while reactor steam was still supplied and HPCI turbine was rotating. In the current analysis, therefore, HPCI was assumed to be unable to sufficiently inject water into reactor from 20:00 March 13 when reactor pressure reached 0.8MPa[gage]. (Figure 1)

The water injection by fire engines in the analysis was set based on the operational records as shown in Attachment 1-4. The water injection rate was set so as not to exceed its daily average discharge flow rate from fire engines and so that measured PCV pressure could be approximately simulated. The PCV spray flow rate was set so as to simulate measured S/C water level increase. (Figure 2).

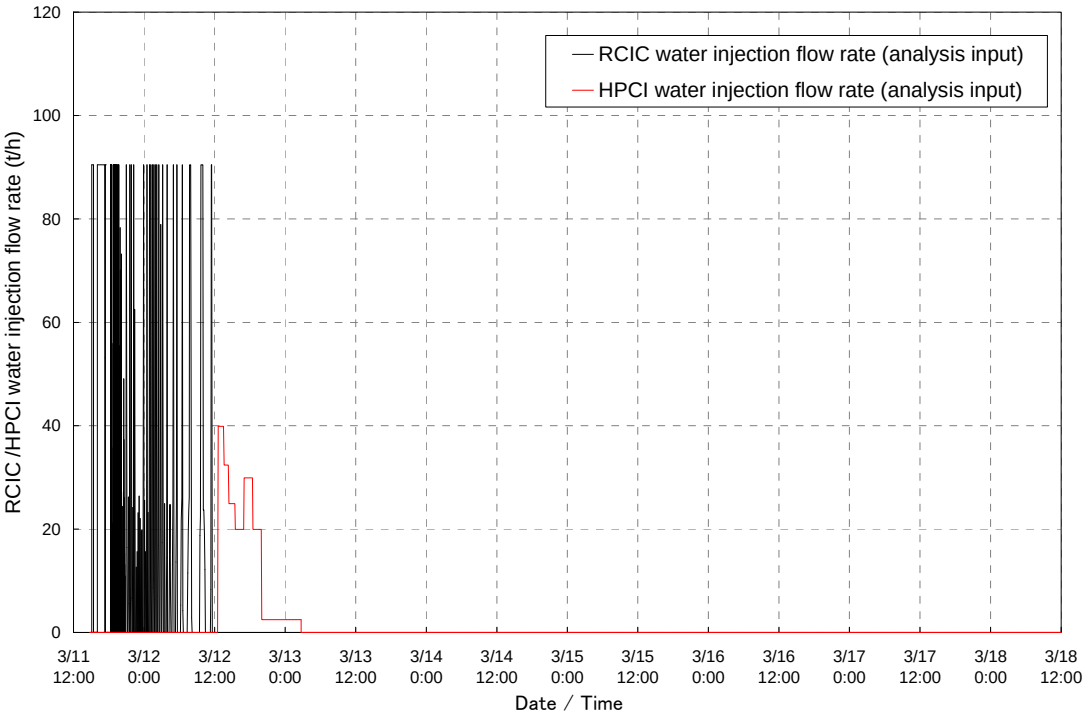

Figure 1　RCIC and HPCI water injection flow rates

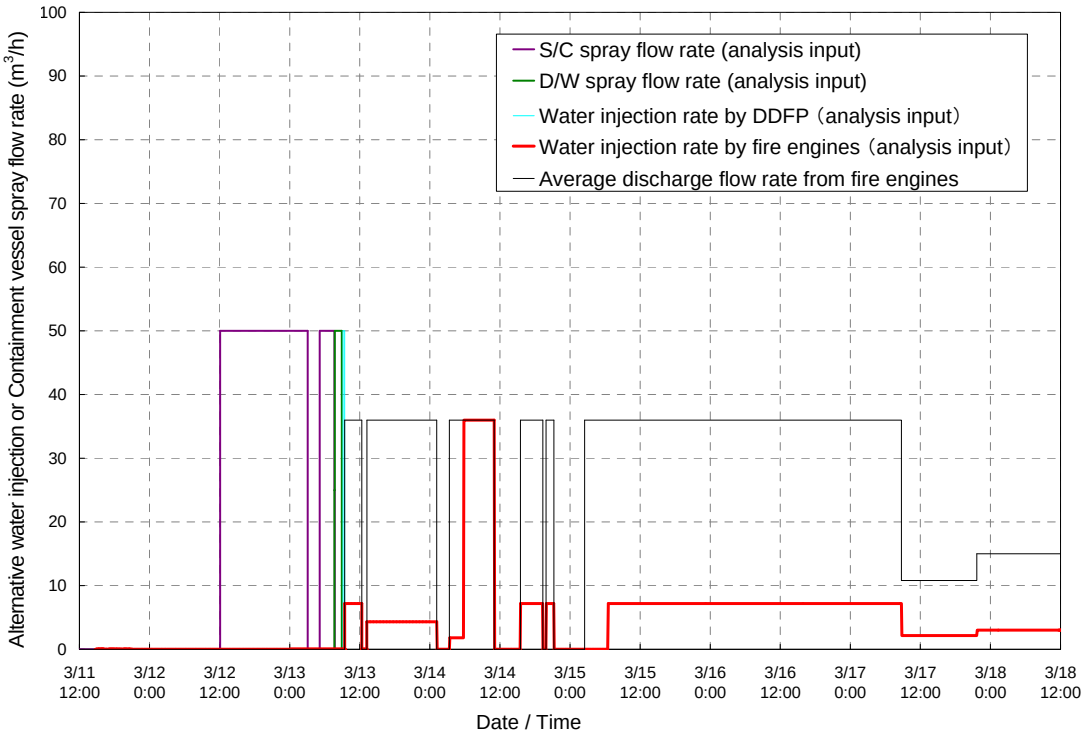

Figure 2　Water injection rates by fire engines and the containment vessel spray flow rate

[Condition for the water injection rate in the previous MAAP analysis reported in March 2012 (Separate Volume 1)]

The amount of water injection by the reactor core isolation cooling system (RCIC) and high pressure coolant injection system (HPCI) for the analysis was set so that the observed reactor water level could be simulated more or less (Figure 3).

The amount of water injection into the reactor by fire engines has been set in the MAAP analysis for Unit-3 as not exceeding the daily average of water injection, based on the operation records made public so far and the flow rate of the containment vessel spray system as shown in Figure 4.

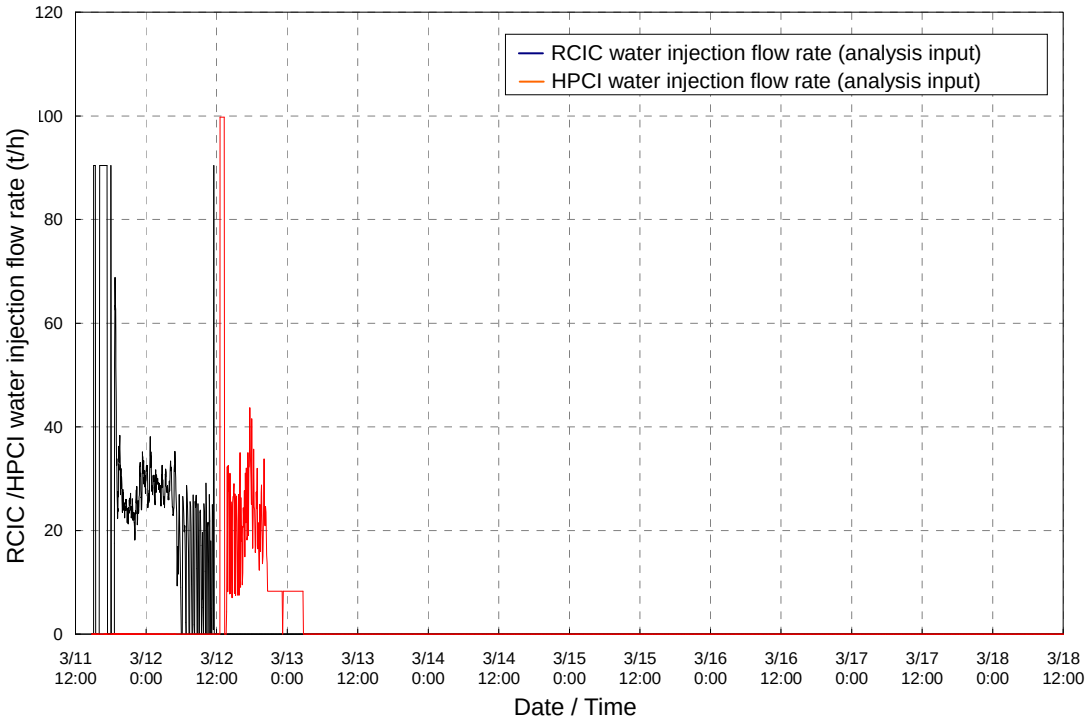

Figure 3　RCIC and HPCI water injection flow rates

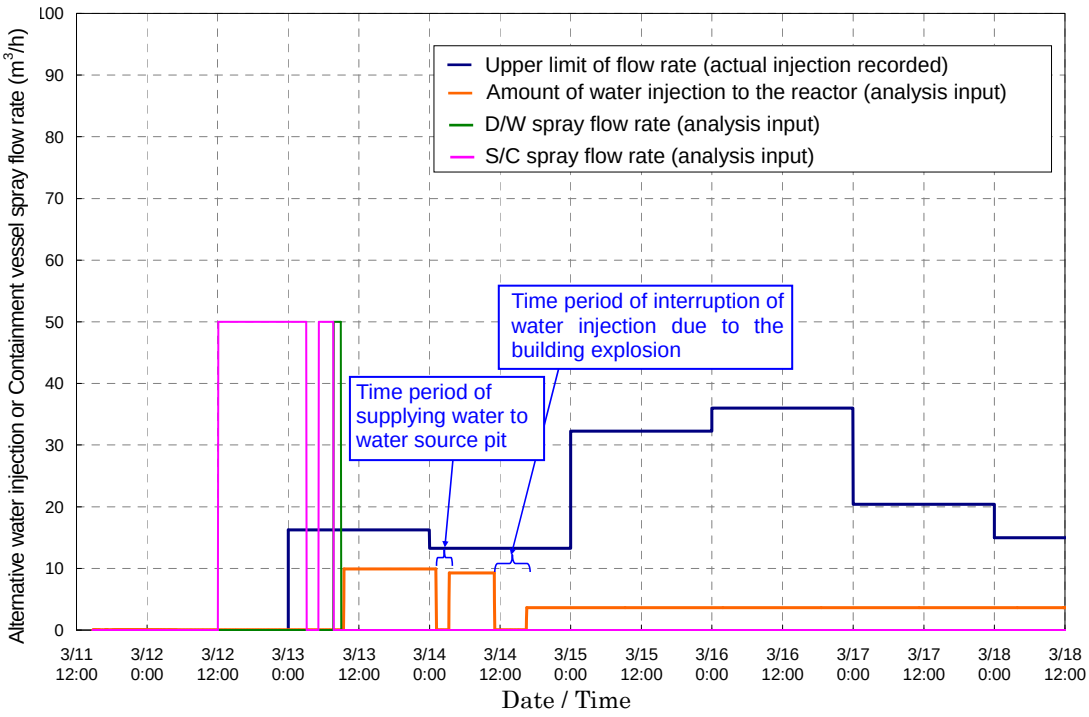

Figure 4　Water injection rates by fire engines and the containment vessel spray flow rate