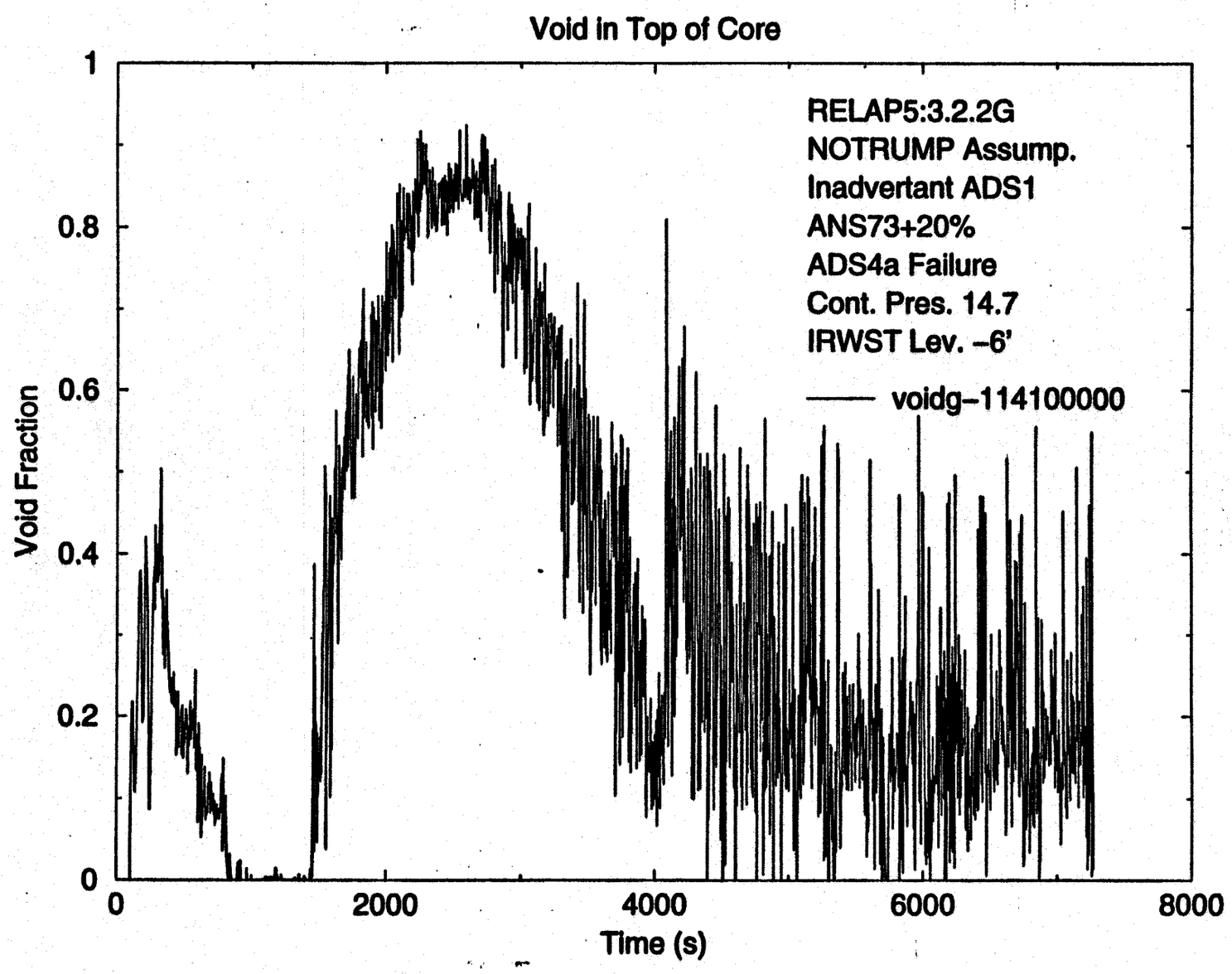
NOTRUMP/RELAP5 Comparison

from WCAP-12612

Inadvertent ADS1
Decay Heat ANS73+20%
ADS4a Failure
Containment Pressure - Atmospheric
Initial IRWST level reduced 6 feet

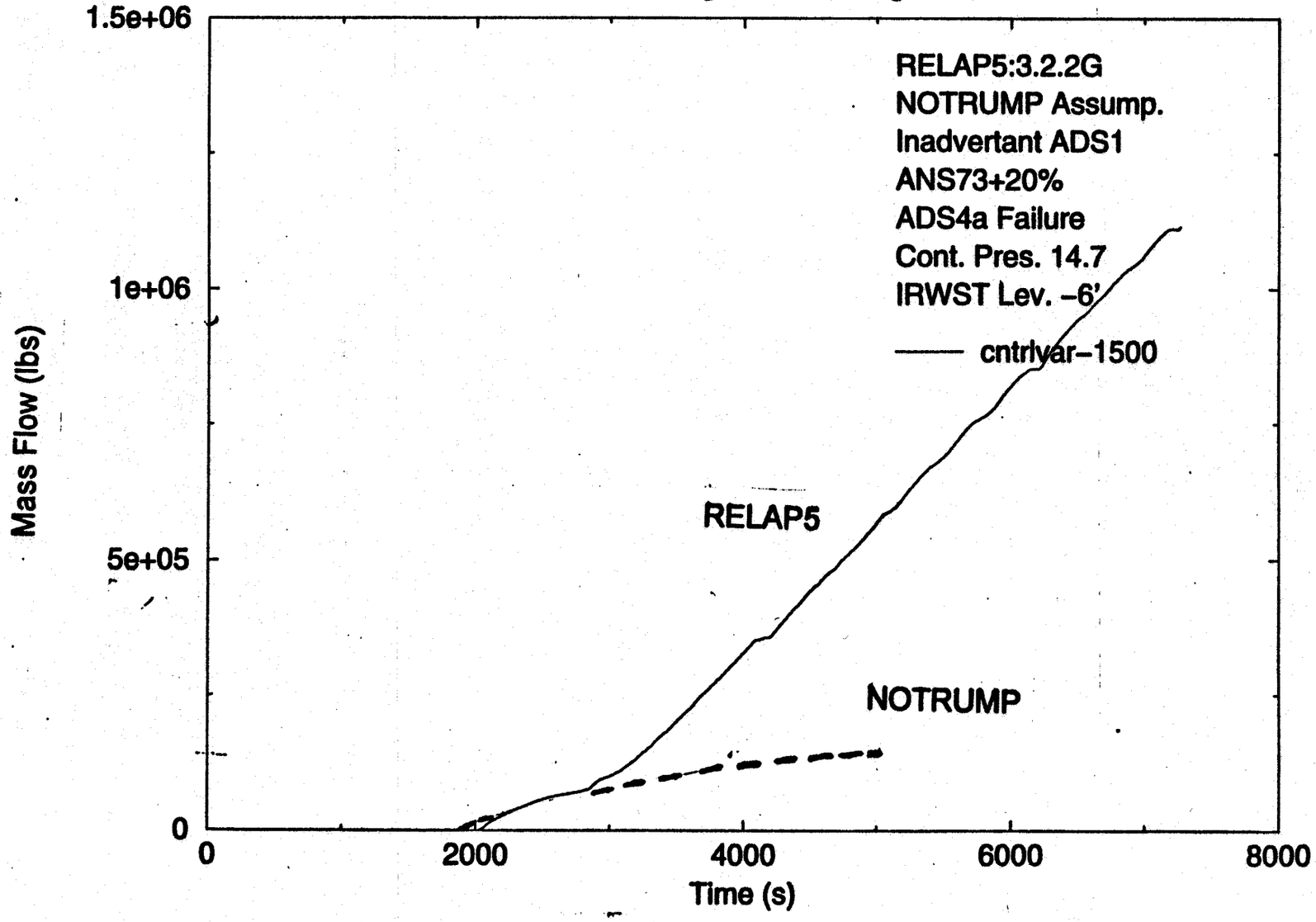
6/06/01

AP600

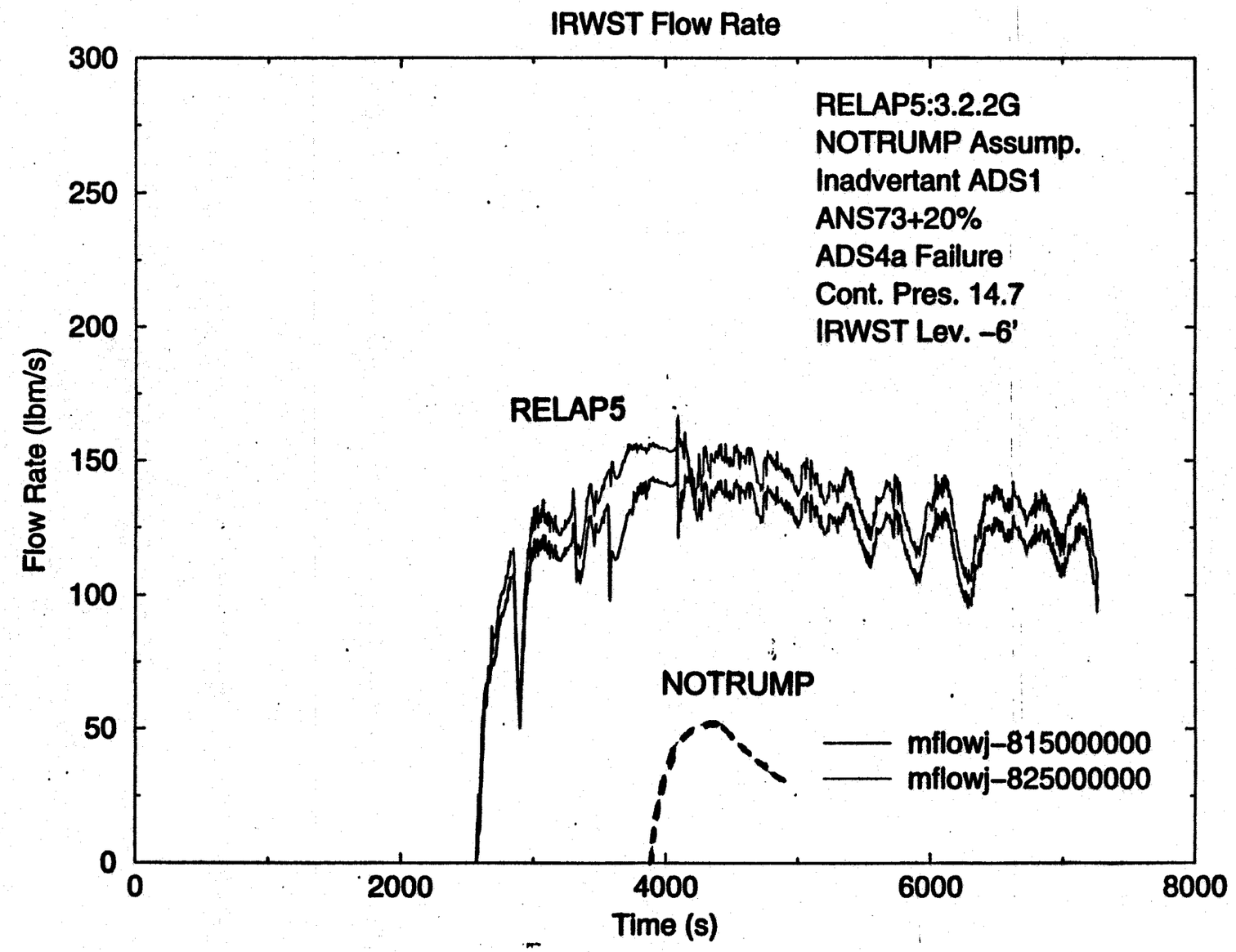

Void in Top of Core
RELAP5:3.2.2G
NOTRUMP Assump.
Inadvertant ADS1
ANS73+20%
ADS4a Failure
Cont. Pres. 14.7
IRWST Lev. -6'
voidg-114100000
Void Fraction
Time (s)
0
0.2
0.4
0.6
0.8
1
0
2000
4000
6000
8000

AP600

ADS4 Integrated Discharge

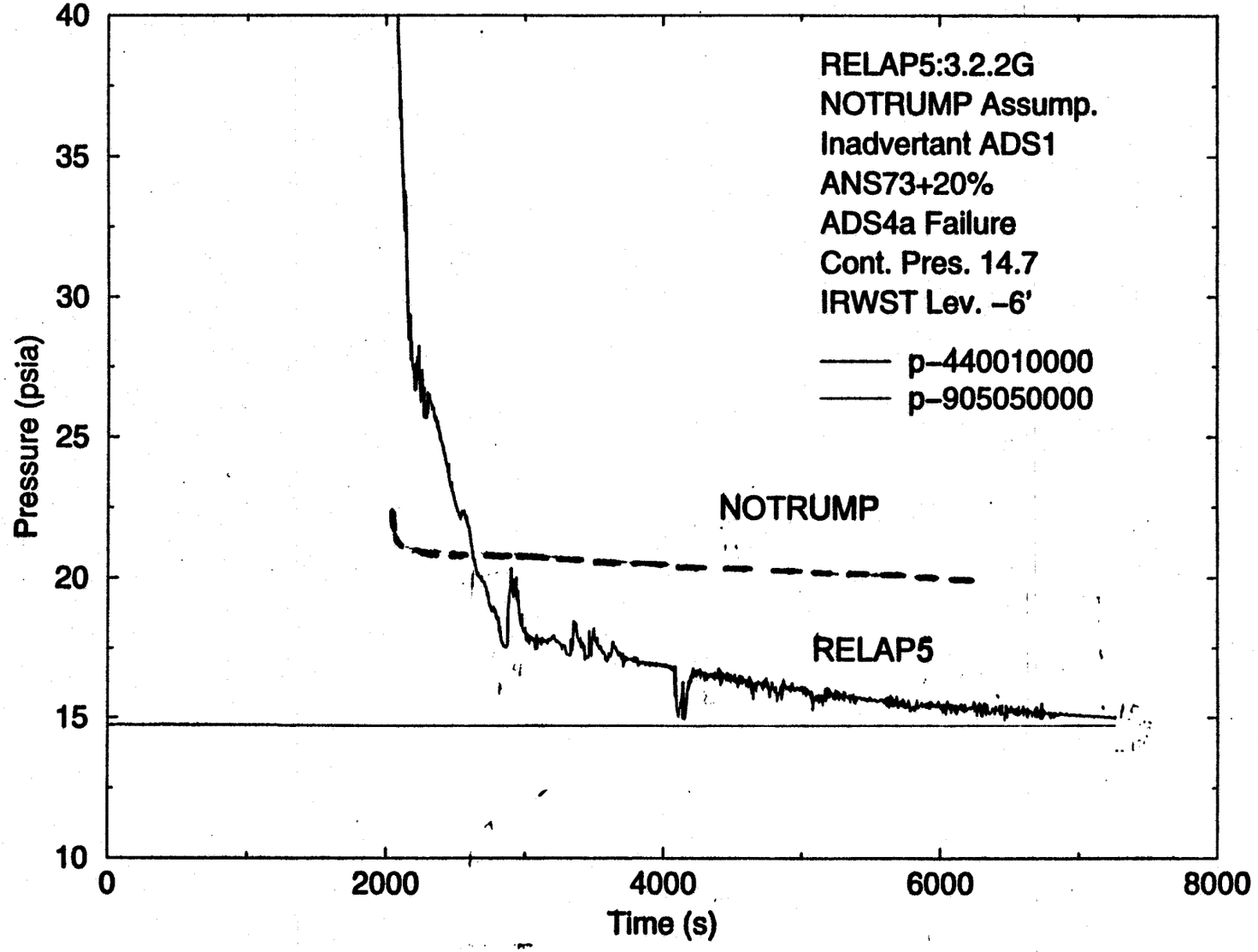


AP600


IRWST Flow Rate
RELAP5:3.2.2G
NOTRUMP Assump.
Inadvertant ADS1
ANS73+20%
ADS4a Failure
Cont. Pres. 14.7
IRWST Lev. –6'
RELAP5
NOTRUMP
mflowj–815000000
mflowj–825000000
Flow Rate (lbm/s)
Time (s)
0
50
100
150
200
250
300
0
2000
4000
6000
8000

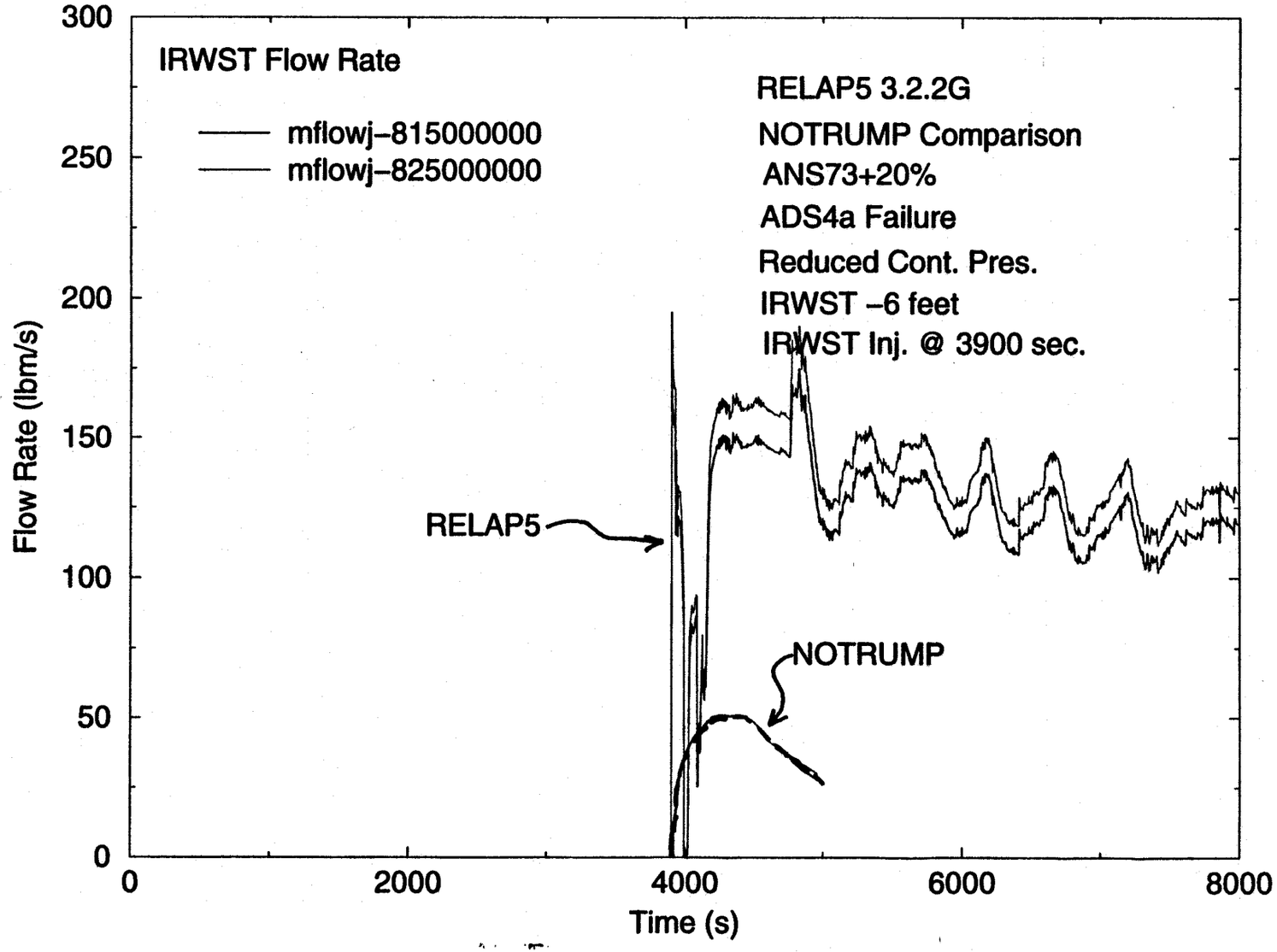
AP600

System Pressure



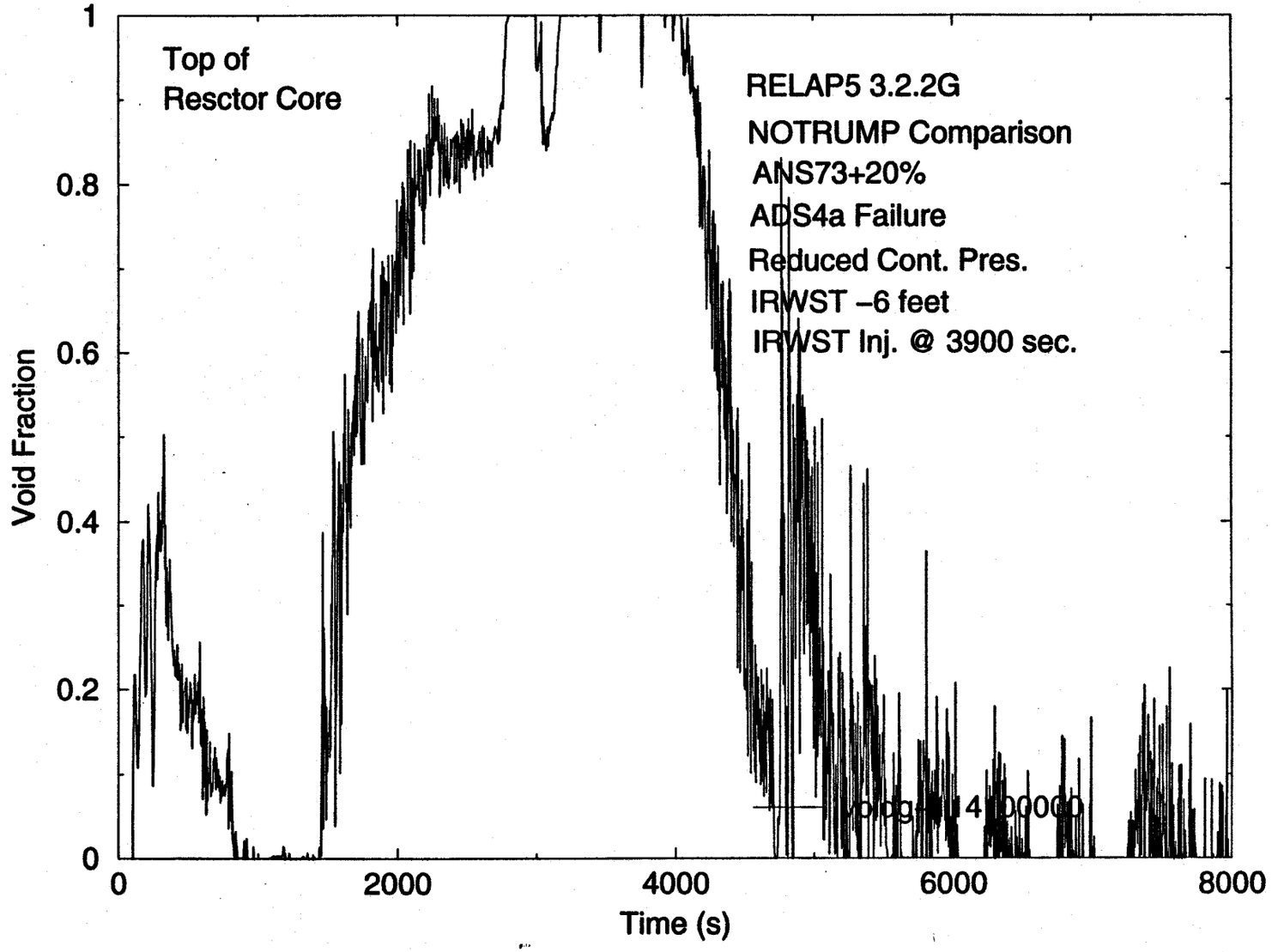
AP600

Inadvertent ADS 1



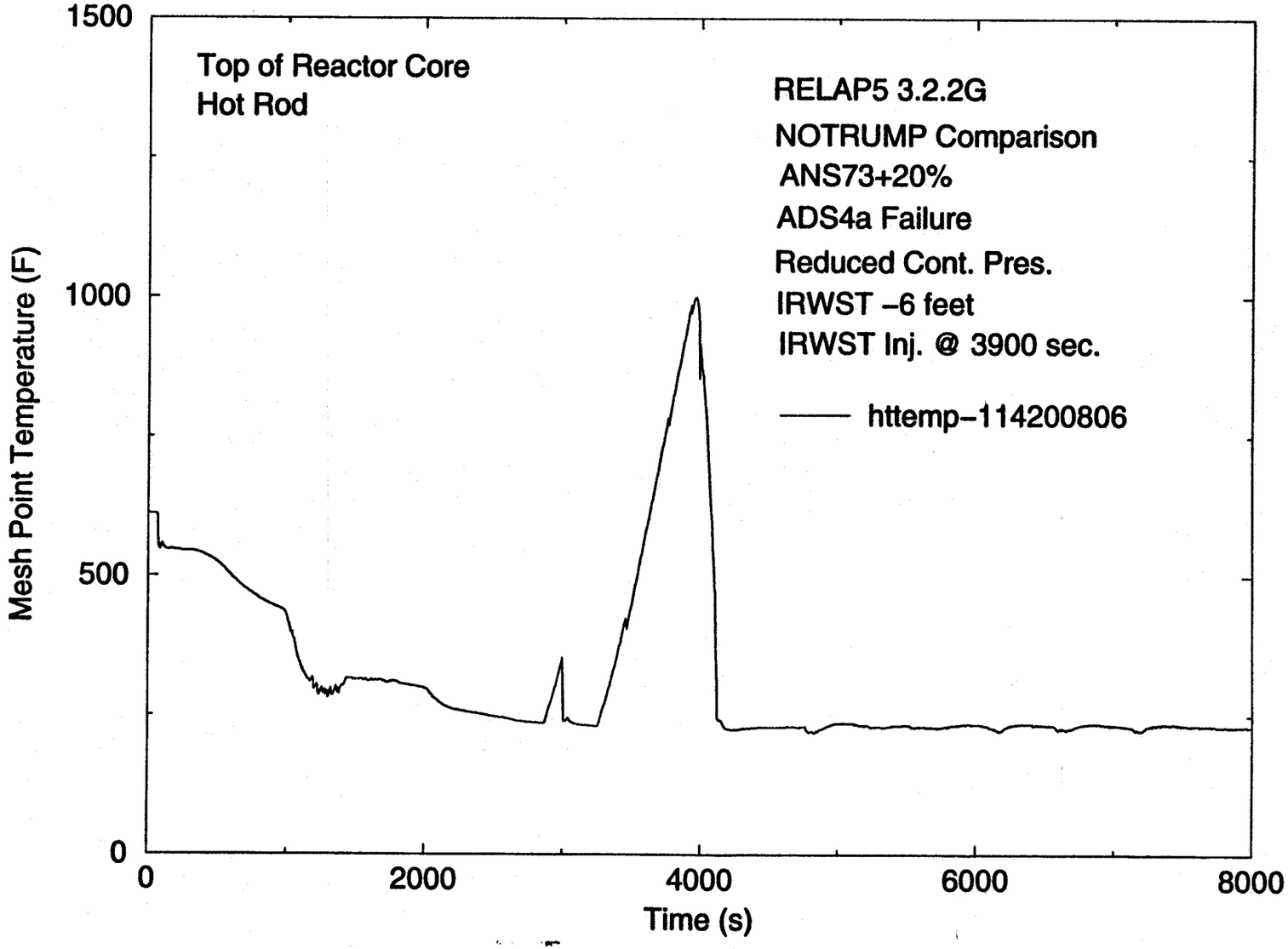
AP600

Inadvertent ADS 1



AP600

Inadvertent ADS 1



Possible Conclusions

NOTRUMP is conservative in comparison to RELAP5 in calculating flow from the IRWST. This may be a result of the lack on momentum flux in calculation of ADS4 flow rate which may result in a higher reactor system pressure during IRWST injection.

NOTRUMP is non-conservative in comparison to RELAP5 for calculating the distribution of coolant within the reactor system during small break LOCA.

Because NOTRUMP is non-conservative in calculating the distribution of coolant before stable IRWST injection it would be non-conservative to extend use of WCOBRA/TRAC to earlier periods of small break LOCA analysis if the code is initialized using NOTRUMP predictions as proposed by Westinghouse in WCAP-15644.