consequences of an accident previously evaluated.

The proposed amendment allows the ABB/CE TIG welded tubesheet sleeves and tube support plate sleeves to be used as an alternate tube repair method for Byron and Braidwood Units 1 and 2 Steam Generators (SGs). The sleeve configuration was designed and analyzed in accordance with the criteria of Regulatory Guide (RG) 1.121 and Section III of the ASME Code. Fatigue and stress analyses of the sleeved tube assemblies produce acceptable results for both types of sleeves as documented in ABB/CE Licensing Report CEN–621–P, Revision 00, ''Commonwealth Edison Byron and Braidwood Unit 1 & 2 Steam Generator Tube Repair Using Leak Tight Sleeves, FINAL REPORT,'' April 1995. Mechanical testing has shown that the structural strength of the sleeves under normal, faulted, and upset conditions is within the acceptable limits specified in RG 1.121. Leakage rate testing for the tube sleeves has demonstrated that primary to secondary leakage is not expected during any plant condition. The consequences of leakage through the sleeved region of the tube is fully bounded by the existing steam generator tube rupture (SGTR) analysis included in the Byron and Braidwood Updated Final Safety Analysis Report (UFSAR).

The current Technical Specification 3.4.6.2.c primary to secondary leakage limit of 150 gallons per day (gpd) through any one SG ensures that SG tube integrity is maintained in the event of main steam line break (MSLB) or loss of coolant accident (LOCA). The RG 1.121 criteria for establishing operational leakage rate limits require a plant shutdown based upon a leak-before-break consideration to detect a free span crack before a potential tube rupture. The 150 gpd limit will continue to allow for early leakage detection and require a plant shutdown in the event of the occurrence of an unexpected crack resulting in leakage that exceeds the TS limit.

The sleeves are designed to allow inservice inspection of the pressure retaining portions of the sleeve and parent tube. Inservice inspection is performed on all sleeves following installation to ensure that each sleeve has been properly installed and is structurally sound. Periodic inspections are performed in subsequent refuel outages to monitor sleeve degradation on a sample basis. The eddy current technique used for inspection will be capable of detecting both axial and circumferential flaws. A 20% sample of the sleeves are inspected each refuel outage. In the event that an imperfection exceeding the repair limit is detected an additional 20% sample will be inspected. The inspection scope is expanded to 100% of the sleeves should a repairable defect be found in the second sample. Tubes that contain defects in a sleeve, which exceed the repair limit, will be removed from service. This ensures that sleeve and tube structural integrity is maintained.

The proposed TS change to support the installation of TIG welded sleeves does not adversely impact any previously evaluated design basis accident. The effect of sleeve installation on the performance of the SG was analyzed for heat transfer, flow restriction, and steam generation capacity. The sleeves reduce the risk of primary to secondary leakage in the SG. The installation of ABB/CE sleeve results in a hydraulic flow restriction that is dependent on the number and types of sleeves installed. The reduction in primary system flow rate is a small percentage of the flow rate reduction seen from plugging one tube and is a preferable alternative when considering core margins based on minimum reactor coolant system flow rates. The sleeving installation will result in a resistance to primary coolant flow through the tube for other evaluated accidents. The results of the analyses and testing, as well as industry operating experience, demonstrate that the sleeve assembly is an acceptable means of maintaining tube integrity. In summary, installation of sleeves does not substantially affect the primary system flow rate or the heat transfer capability of the steam generators.

The sleeve sample size has been increased from 3% of the sleeved tubes in all four steam generators to include an eddy current inspection of a minimum of 20% of each sleeve design installed. Increasing the sample size of the sleeves to be inspected will increase the monitoring of tubes using sleeves for any further degradation while they remain in service. If the sample identifies a sleeve with an imperfection of greater than the repair limit, an additional 20% of the sleeves shall be inspected. The sleeves that have identified imperfections of greater than the repair limit shall be removed from service. Increasing the monitoring of the sleeves will assist in the early detection of a tube or sleeve imperfection and limit the probability of occurrence of an accident previously evaluated in the UFSAR.

Installation of the sleeves can be used to repair degraded tubes by returning the condition of the tubes to their original design basis condition for tube integrity and leak tightness during all plant conditions. The tube bundle overall structural and leakage integrity will be increased with the installation of the sleeves reducing the risk of primary to secondary leakage in the SG while maintaining acceptable reactor coolant system flow rates. Therefore sleeving will not increase the probability of occurrence of an accident previously evaluated.

Removal of the BWNT kinetically welded sleeve process as an approved SG tube repair methodology and not completing the additional corrosion testing necessary to establish the design life for the BWNT kinetically welded sleeve in the presence of a crevice will have no affect on plant operations. There are currently no BWNT kinetically welded sleeves installed in the Byron or Braidwood SGs. Had there been, plant operations would have still been bounded by the existing SGTR analysis in the Byron and Braidwood UFSAR.

Therefore, these proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. The proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

The implementation of the proposed sleeving process will not introduce significant or adverse changes to the plant design basis. Stress and fatigue analyses of the repair has shown the ASME Code and RG 1.121 allowable values are met. Implementation of TIG welded sleeving maintains overall tube bundle structural and leakage integrity at a level consistent with that of the originally supplied tubing. Leak and mechanical testing of the sleeves support the conclusions that the sleeve retains both structural and leakage integrity during all conditions. Repair of a tube with a sleeve does not provide a mechanism that result in an accident outside of the area affected by the sleeve.

Any hypothetical accident as a result of potential tube or sleeve degradation in the repaired portion of the tube is bounded by the existing SGTR analysis. The SGTR analysis accounts for the installation of sleeves and the impact on current plugging level analyses. The sleeve design does not affect any other component or location of the tube outside of the immediate area repaired.

The current Technical Specification 3.4.6.2.c primary to secondary leakage limit of 150 gpd through any one SG ensures that SG tube integrity is maintained in the event of an MSLB or LOCA. The limit will provide for leakage detection and a plant shutdown in the event of the occurrence of an unexpected single crack resulting in excessive tube leakage. The leakage limit also provides for early detection and a plant shutdown prior to a postulated crack reaching critical crack lengths for MSLB conditions.

Inservice inspections are performed following sleeve installation to ensure proper weld fusion has occurred to maintain structural integrity. The post installation inspection also serves as baseline data to be used for comparison during future inspections. Periodic eddy current inspections monitor the pressure retaining portions of the sleeve and parent tube for degradation. Eddy current techniques will be employed that are sensitive to axial and circumferential degradation.

Increasing the sample size of tubes repaired using either sleeving process during each scheduled inservice inspection will increase the monitoring of these tubes for any further degradation. The improved monitoring and evaluation of the tube and the sleeves assures tube structural integrity is maintained or the tube is removed for service.

Corrosion testing of typical sleeve-tube configurations was performed to evaluate local stresses, sleeve life, and resistance to primary and secondary side corrosion. The tests were performed on stress relieved and as-welded (non-stress relieved) sleeve-tube joints. Using the corrosion test data in conjunction with finite element analyses of the local stress, the stress relieved joint life was determined to be in excess of 40 years. The ABB/CE TIG welded sleeve operating experience in the industry has shown no sleeve failures due to service induced degradation in sleeves that were installed with acceptable inspection results. This experience includes the stress relieved and