

## **Structure Integrity Hierarchy: A Tool for Incident Planning and Response**

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The Oroville Independent Forensics Team (IFT) report discussed the dynamics of decision-making that occurred during the Oroville spillway incident, exploring differing perspectives that informed the many decisions made throughout the incident. Those decisions were made under tight time constraints and great pressure, involving trade-offs with respect to which infrastructure to save and which to sacrifice as the situation evolved. The differing perspectives were valid, each representing critical considerations, each involving severe consequences if not honored. How can dam owners prepare themselves for such a situation? One approach is to develop a Structure Integrity Hierarchy -a decision support tool to facilitate decisions involving trade-offs between the array of infrastructure. A Structure Integrity Hierarchy consists of: (a) An inventory of infrastructure components that comprise a facility, including the dam and saddle dams, spillways and outlet works, hydropower facilities, diversions, utilities, access routes, etc.; (b) A structure integrity ranking for each infrastructure component, indicating the relative importance of maintaining the structural or operational integrity of the component throughout the incident; (c) Accompanying narrative that outlines the corresponding rationale for each structure integrity ranking. Developing a Structure Integrity Hierarchy begins with identifying objectives to guide the hierarchy, objectives such as avoiding breach of the dam, avoiding breach of a saddle dam, avoiding damage to hydropower facilities, minimizing environmental impacts, minimizing costs, etc. The objectives are then used to guide the ranking of structure integrity, considering impacts that would result from failure of each structure, and documenting the rationale and considerations. The Structure Integrity Hierarchy should be developed before onset of an incident. This allows for well-considered evaluations, a wide range of input, professional discourse, and review - without the pressure of responding to an actual evolving event. The resultant Structure Integrity Hierarchy then is available as a tool to facilitate decision-making should an incident occur. The process of creating the Structure Integrity Hierarchy may lead to better preparation, prevention, and risk management in advance of an incident.