

Comments on the Oroville Dam Citizens Advisory Commission Report

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1. Introduction

One of prime purposes of a Commission, particularly one like the OCAC which is established in response to a dangerous incident, such as the spillway collapse and the unexpected erosion of the emergency spillway, is to explore and bring to light the fundamental reasons that make such a failure possible.

The 3 year Report provides a comprehensive description of the proceedings of the Commission but does not cover adequately the treatment of several more fundamental recommendations and issues which were 'delved into' but not translated into advice on which the DWR could be expected either to act upon or provide reasons for setting aside.

This meant that many of the basic reasons behind weaknesses and failures in the Dam and its operation were touched on but not explored or openly acknowledged. The comments here, which are based on 5 years reading about the Dam and on the information available from the CNA and OCAC meetings, are intended to point out the superficiality of the handling of several important topics. The suggestions and recommendations, if adopted, would provide Commissioners with information necessary for them to have a better understanding of the strengths and weaknesses in the management of the Dam and to offer constructive advice.

The presentation given by Dr. Rune Storesund, Director of the UC Berkeley Center for Catastrophic Risk Management and a CNA Ad Hoc Committee member, on 'Community Safety Following Comprehensive Study' was the only paper covering the safety (risks), operation and infrastructure of the Dam which was not given by someone from the DWR or representing an organization with either direct or indirect relationships with the DWR. Therefore, the recommendations that Dr. Storesund made deserved to be discussed and the DWR asked for detailed responses. This did not happen.

2. Summary of Suggestions and Recommendations

- The Commission should continue to emphasize the need for comprehensive, accurate inundation maps, particularly for high level releases from the Dam. These should be commissioned immediately and circulated as soon as possible. This may take at least a year.
- The limitations of the Comprehensive Needs Assessment (CNA) should be acknowledged and the DWR be asked to explain whether risk assessment methods such as design assumption audits and implementing life cycle analysis have been adopted and if not, why not.

- The conflicts and incentives that result from the original agreements governing the Dam should be openly acknowledged and steps taken to monitor and minimize any dangerous consequences.
- It should be realized that the State Water Contractors (SWC) are important participants in financing the Dam maintenance and renovation and thus in its operation. The SWC should be included in the Commission meetings so that they are available to explain their decisions and policies, as is the DWR.
- The Commission should have access to the information on which the State Water Project Finance Committee develops maintenance budgets and policies for maintenance and renovation as they affect Oroville Dam.
- The Commission should have the opportunity of reviewing the DWR's responses to the Independent Forensic Team's recommendations.
- The Commission should continue to encourage developments which allow Commissioners and CNA Committee Members to play a greater role in the Commission proceedings.

3. Inundation Maps

One recommendation of Dr. Storesund's that was acted on, although so far to a limited extent, was his recognition that the Comprehensive Needs Assessment (CNA) had not addressed the likely impact of high releases from the Dam particularly in the 180,000 cfs to 200,000cfs range. In 1997, the DWR's Chief Hydrologist forecast that the lake would fill and spill perhaps 250,000 cfs within 24 hours but the rain stopped sooner than he expected. Dr. Storesund offered to prepare a study of the impact of high releases. This was presented to DWR and submitted for a government grant. There was no opportunity for the Commission to endorse this study formally and the DWR, while supporting it in principle did not put much weight behind their support, unlike the local community which, through the Feather River Recovery Alliance, offered the requested financial community support.

The Commission has taken up the question of inundation maps as is noted in the Report. It has become clear that the inundation maps shown to the Commission were based on assumptions which resulted in them being quite unrealistic, certainly as far as those for the river around Oroville are concerned. The fact that, apparently, these were maps submitted to FERC, after the spillway incident, to illustrate the impact if the emergency spillway were to be undermined, does not give confidence that the DWR/Department of Safety of Dams could, at least in 2018, be trusted to give FERC accurate information necessary for FERC to act as an informed regulator. The information given by the DWR to FERC before the spillway incident was woefully misleading.

It has also become clear that there are a number of more realistic inundation maps prepared by other government agencies, such as FEMA, including ones for releases of 175,000cfs and 300,000cfs. The ones we have been shown were created at least 20 years ago and did not reflect improvements in the levees. But, we still do not know whether up to date accurate

inundation maps for releases up to at least 200,000cfs will be developed even though I asked a direct question at the October Commission meeting.

It is essential for physical protection of vital infrastructure, for evacuation planning, and for providing data for the cost/benefit of improvements that such maps be available. It was encouraging that the Chairman of the Commission requested that inundation maps remain on the agenda for the Commission's future meetings. There is a lot that still needs to be done in this area before we know how safe we are and to provide accurate information to those responsible for minimizing damage when releases are above 150,000cfs.

4. Governance, Maintenance and the SWC

Dr. Storesund also recommended that the DWR adopt maintenance procedures that are standard in well run Dams. These include performing design assumption audits and implementing life cycle based management. The Commission has not heard whether the DWR has considered adopting these straightforward risk management tools which were sadly lacking prior to the spillway incident. If they have not, what is the reason?

At present, at least from the viewpoint of an outside observer, the maintenance budgeting procedure seems to be that the SWP Project Finance Committee (PFC) develops a maintenance budget, perhaps based on the volume of water that is, or is forecast to be, available and the DWR then attempts to match the requirements to this budget. The SWC and DWR share control of the PFC but the powerful SWC holds the whip handle, not unreasonably since the SWC covers the cost of maintaining the Dam in return for getting free water. It is, however, inappropriate for customers with little or no accountability to be in control of the maintenance of a facility that involves significant risks to downstream communities.

This situation arose from the agreements made at the time the Dam was built which govern the financing of the Dam. The assumptions behind these agreements turned out to be unrealistic. The SWC does not receive the agreed volume of water nor did the Oroville Community receive the recreation enhancements that were promised. Mutual distrust is understandable and will remain until the situation is discussed and understood. The Commission has not broached this subject although it has influenced presentations.

Dangerous incentives result from the original governance. First, the DWR is under continual pressure to minimize maintenance costs which seem only to be justified as far as the SWC is concerned when they are required by regulation. This does not encourage a relationship between the DWR and FERC that puts safety first. Second, if lack of proper maintenance and improvements cause a crisis, as they did with the spillway incident, governments rather than the SWC will cover a large part of the costs which are a multiple of the cost of proper planned maintenance. Third, the problem of financing maintenance contributes to the reluctance of the DWR to discuss openly, and possibly to investigate closely, issues where the problems might be expensive to fix such as the need for a low-level release, the green spots and gates. Fourth, because of the strength and control of the SWC coupled with its reluctance to finance major

projects, the DWR is discouraged from adopting methods for assessing maintenance that are comprehensive and independent or from seeking genuinely independent advice from Dam professionals.

The DWR has stated that they have addressed many of the recommendations of the Independent Forensic Team, but as Dr. Storesund pointed out in his presentation there is little evidence that some of the more important ones, particularly those relating to culture which results from the governance, have been adopted. The Commission has not been given details of the DWR's response. A review of the DWR's response to the important IFT recommendations would build trust in the DWR.

The approaches recommended by Dr. Storesund for assessing maintenance needs would likely indicate that there is a substantial backlog in maintenance. Even if this is not the case, they would provide a scientific basis for forecasting what is needed to maintain a safe dam.

Given this background, it is not surprising that the DWR adopted the flawed CNA process after the spillway incident. The CNA conclusions are frequently mentioned in the Commission hearings with the assumption that these are actionable. FERC generally does not consider them to be. Quite rightly, because they are based on the collective opinions of DWR employees reviewed by an independent panel (IRB), who were presumably paid by the DWR. Many of the recommendations of the CNA Ad Hoc Citizens Committee that was a precursor of the Commission were ignored. The CNA was a valuable survey by those best in a position to assess the probable risks, but it was not comprehensive, as noted by the IRB, nor independent, as misleadingly claimed by the DWR. Until the conclusions are supported by scientific verifiable data, which could be developed using the methods proposed by Dr. Storesund, they are not actionable. The Commission has implicitly accepted the CNA conclusions as sound. This is doubtful. The Commission should be informed about the limitations of these conclusions. The Commission did not have the opportunity to question the CNA process adequately.

The Commission, which represents downstream communities and thus has safety as its main priority, should have access to the information on which the PFC makes asset management plans and on the decision-making process relating to maintenance and renovation. This is consistent with Section G2 in the Commission Charter. At present, the Commission just receives information on the DWR plans without any insight into the background or what alternatives were considered.

The involvement of the SWC in the Commission, which is not mentioned in the report, was brought up at an early Commission meeting. A representative from the SWC gave a presentation and a SWC representative sometimes attends the meeting but has no formal role. Consideration should be given to asking a representative of the SWC to be present at Commission meetings to answer questions about their decisions and decision-making process. The SWC involvement in developing the budget for maintenance of the Dam suggest that they should play a formal, public role in the Commissions proceedings along with the community and the DWR.

It is not likely that the governance of the Dam will be changed because of anything the Commission advises but the Commission can make sure the basic governance issues are recognized and keep a spotlight on risky DWR policies and actions that are an unforeseen consequence of the flaws in the governance. Transparency is essential for trust.

5. Steering Committee

The Commission is showing signs of becoming a needed, and previously missing, voice advocating for the minimization of risk to balance the other powerful interests. Recently, several of the Commissioners and CNA Ad Hoc Committee members have formed what we, with some presumption, called the OCAC Steering Committee. If this becomes a way for all Commissioners to get topics of interest to the local communities onto the Commission agenda, thus providing an opportunity for Commissioners to formulate well informed advice to the DWR, and allows for intelligent discussion of the DWR's responses, trust in the DWR will grow. Decisions relating to the Dam will have the benefit of a community perspective and the probability of further dangerous surprises resulting from the Dam will be reduced.

6. Conclusion

The Legislature was wise to adopt the initiative of Assembly Member Gallagher and Senator Nielsen to establish an independent advisory commission within the Department of Natural Resources. What has been missing is Commissioners playing their role by participating fully in Commission's process.

We have come a long way from the Legislative Hearing on the Dam and the spillway incident in early 2018, co-chaired by Assembly Member Gallagher, at which the then Secretary of Natural Resources and the Director of the DWR left the room as Professor Bob Bea started to comment on the fundamental problems with the Dam about which he published over 10 papers supported by detailed analysis. Professor Bea concluded that the governance of the Dam was dysfunctional and that as a result it had been operated incompetently - his actual words were harsher. The OCAC provides a forum for the Director of the DWR and the Secretary of the Department of Natural Resources to listen to constructive criticism and for the downstream communities to bring attention to their concerns. The Commission is already throwing light on dark corners and has the potential to do much more. It will be interesting to look back in 3 years' time and learn whether this potential has been realized.