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THE NUCLEAR IMPACT

By FRANK KEITH and CATHERINE B. WRENN

Boulder: Westview Press. 1976. Pp. 248. \$18.50.

The strongly worded preface by Senator Haskell and the moderately stated introduction by the authors may foster an impression that this book will grant little notice and concede less validity to any opposing position. This does not prove to be the case. Instead, the core of the book is a well balanced, thoughtfully documented account of the events and controversies surrounding the three Plowshare experiments in stimulating natural gas production with nuclear explosives. Data on the technical, legal and political issues are presented in an even-handed manner. The reader always knows he is being led but never feels he is being driven.

Evolution of opposition to the Plowshare program is traced through the three experiments—Gasbuggy, Rulison and Rio Blanco. As the intensity of the conflict increases, the diversity of antagonists grows. Apaches near the Gasbuggy site remained passive, accepting official assurances that their people would be unharmed and their property would be undamaged. In consequence, this first experiment was essentially unopposed. The climate changed as the Rulison test approached. The people of Colorado believed they had the right to participate in the decision-making and the ability to influence the outcome. Several state agencies also became involved and a commercial corporation joined the opposition.

The web of conflicting interests spread even further by the time of the Rio Blanco event. Appeals on various issues were directed to local, state and federal governments. Predictably, positions became fixed, competence was questioned, motives were impugned and improbable alliances were formed. A pure water proponent and an oil shale developer on the same side of an argument is reminiscent of parsons and bootleggers fighting the repeal of prohibition.

When the results of the three gas stimulation experiments fell far short of predictions, the program was suspended. The full strength of the contending factions was not tested. The effect of technological success on the outcome will never be known. Recent history shows that many of the issues recur when each new major technology is introduced.

The authors point out that the Plowshare experience furnishes a useful, although incomplete, model that discloses weaknesses in our decision making system and reveals means by which it could be improved. They recommend an obligatory program of public education and a structured process of technical evaluation.

While these recommendations appear reasonable, some of the most

formidable impediments to their implementation receive little attention. The legal and political difficulties may be overcome, but flaws in available information and defects in evaluation methods will persist. Available information will always be incomplete at the early stages of technology development, even if the barriers of government classification and proprietary rights are set aside. A broad band of uncertainty will still obscure the facts. Competent experts of the highest integrity will continue to find latitude within this band for disagreement.

Evaluation methods are most frequently limited by their inability to describe such crucial elements as costs, risks and benefits in terms that are at once internally consistent and externally acceptable. No amount of mathematical rigor or logical elegance is likely to eliminate this limitation in the foreseeable future.

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