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## Inspections over Time: The Role of Information

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When inspections in nuclear plants are planned over time it has to be decided if the time points of all inspections are fixed at the beginning of the reference time interval, e.g., one year, or if they are fixed sequentially. In the latter case the time point for the second inspection is fixed only after the first one has been performed, the third after the second one, and so on. For that decision, not only organisational aspects have to be taken into account but also the role of information: Will the Inspectorate in the latter case be able to draw an advantage from the fact that after the first inspection it may know what the plant Operator's behaviour was so far? Vice versa, the same holds for the Operator in case he plans to start an undeclared activity in the course of the reference time interval.

In this paper two general inspection schemes are analysed: The Operator behaves sequentially in both cases, whereas the Inspectorate behaves sequentially in the one, and non-sequentially in the other case. It is shown that both schemes lead to the same optimal expected detection time which means that the Inspectorate may do what is easier from organisational and financial points of view. These results are discussed from the point of view of information which both parties may gain in the course of the inspection over time. With some care the essential arguments may also be applied to more complicated, i.e., realistic inspection schemes which cannot be analysed quantitatively until now.

Keywords: IAEA, Inspection planning, Detection time, Game Theory

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