**Referee’s report :** Programme of Day-1 experiments at the SHE Factory**h**

Following the successful launch, on 26.12.2018, of the first beam of accelerated heavy ions produced the [DC-280](http://flerovlab.jinr.ru/flnr/she_factory_no.html) cyclotron in the [Flerov Laboratory of Nuclear Reactions JINR](http://www.jinr.ru/jinr_structure-en/laboratories-en/#l4), which was a remarkable achievement. This was a major milestone and should be considered as a world level achievement. As stated in the directorate note, the intensities of accelerated ions of the new cyclotron are an order of magnitude higher than those achieved previously in the world’s leading nuclear physics centers. Furthermore, this long range programmeis a realization of the past 20 years of achievements and major discoveries at the FNLR, including five new superheavy elements have been discovered in JINR that concluded the 7th period of the Periodic Table

In the status report presented by V. Utyonkov, a requirement for the significant increase in the intensity of the experiment is proposed in order to extend the area of synthesized super heavy nuclei.The author notes further that the a series of experiments which are planned to be performed for testing the capabilities of DGFRS-2 coupled with DC-280 will be presented. These include experiments on the production of Z=90-104 isotopes in 48Ca- and 50Ti-induced reactions. In principle, the FNLR group will realize these objectives; however, as with all new detector and accelerator systems, the PAC would need assurance that all the system “shakedown” and stress testsprocesses – in terms beam optimization, targets, readout and DAQ stability etc – have been systematically undertaken.

The above considerations notwithstanding, the **proposal is strongly recommended**.

Zeblon Z. Vilakazi (17.01.2019)

University of the Witwatersrand, Johannesburg.