LARGE REVERSE OSMOSIS DESALINATION PLANT PROPOSED

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[Text]

Sdom – The construction of a large scale energy economical sea water desalination plant, as part of the Mediterranean – Dead Sea (M-DS) Canal project, has been proposed here by the experts of Mekorot, the country's national water supply company. Such an installation, to operate on the reverse osmosis principle, would derive most of the energy it needs from the 400 meter drop to the level of the Dead Sea. Mekorot has extensive experience with desalination facilities, having operated more than twenty of them over a period of years.

Reverse osmosis is a system, in which the relatively pure water component of a saline solution is "pushed" through a permeable membrane, while another part of that liquid – and with it most of the dissolved salt – remain behind. In this manner, potable water is produced at the cost of a relatively modest energy expenditure.

The canal from the Mediterranean to the Dead Sea, now in an advanced state of research and planning, is intended to serve two major purposes. First of all, the 400 meter (about 1,300 ft) difference in elevation between those two bodies of water will be utilized to drive a large hydroelectric plant; with the help of an extensive regulating reservoir, high above the Dead Sea, peak hour production has been projected at 600MW.

Secondly, the influx of large quantities of Mediterranean water is intended to halt, and during an initial period even to reverse, the saline lake's steady evaporation. After some years an equilibrium will be reached, with the inflow thereafter stabilized at something like one billion cubic meters a year.

The desalination scheme now proposed for the canal's Dead Sea terminal would utilize the 400 meter head in the system to provide most of the 56 atmospheres (about 800 psi) needed to push water through the membrane stacks. The somewhat lower

pressure still present in the product water and in the discarded brine would operate turbines linked directly to some of the pumps required in the system. Residual brine could be dumped into the Dead Sea, or else returned to the regulating reservoir, from which sea water flows to the hydroelectric plant. If the latter, slightly more expensive approach is taken, desalination will not affect the system's generating capacity, which is limited by the amount of water that can be dumped into the Dead Sea to replace evaporation from its surface.

The reverse osmosis plant is intended to provide ample quantities of potable water, a vital resource for the settlement of that desert area. An output of up to 100,000 cubic meters per day seems feasible, at a relatively modest cost in terms of both capital investment and operating expenditure. The former is estimated at between $1.50 and $2, per cubic meter of annual output, or $45 to $60m. for a 100,000 cu.m./day plant. The projected product cost of between 28 and 49 cents per cubic meter of fresh water also seems eminently reasonable, well within the price range modern communities could afford to pay.

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