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Tim D. Cochran (cochran@rice.edu), Dept of Mathematics, MS #136, Rice University, 6100 Main St., Houston, TX 77005, **Shelly Harvey*** (shelly@rice.edu), Dept. of Mathematics, MS #136, Rice University, 6100 Main St., Houston, TX 77005, and **Peter D. Horn** (pdhorn@math.columbia.edu), Columbia University, Department of Mathematics, MC 4403, 2990 Broadway, New York, NY 10027. *Filtering smooth concordance classes of topologically slice knots.*

In the late 90's, Tim Cochran, Kent Orr, and Peter Teichner defined the (n) -solvable filtration, $\{F_n\}$, of the smooth knot concordance group, C , which provided a framework for many advances in the study of knot concordance. However it is useless for studying the subgroup, T , of topologically slice knots. We define and investigate new filtrations of C : the n -positive filtration $\{P_n\}$, the n -negative filtration $\{N_n\}$, and their intersection $\{NP_n\}$, which is a filtration by subgroups. These are essentially refinements of $\{F_n\}$. From these we get a filtration on the subgroup of topologically slice T by setting $T_n = NP_n \cap T$. We use Casson-Gordon invariants and d -invariants from Heegaard Floer homology to show that this is a non-trivial filtration at the lower levels, that is T_0/T_1 and T_1/T_2 are non-trivial. We will also give evidence, using Heegaard Floer d -invariants and L^2 rho-invariants, that T_n/T_{n+1} is highly non-trivial for each n . (Received March 07, 2011)