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Transitions, cross sections and neutron binding energy in ^{186}Re by Prompt Gamma Activation Analysis[1] A.G. LERCH, Air Force Institute of Technology, A.M. HURST, R.B. FIRESTONE, Lawrence Berkeley National Laboratory, ZS. REVAY, Technische Universitat Munchen, L. SZENTMIKLOSI, Centre for Energy Research, Budapest, S.R. MCHALE, J.W. MCCLORY, Air Force Institute of Technology, B. DETWILER, Youngstown State University, J.J. CARROLL, US Army Research Laboratory — The nuclide ^{186}Re possesses an isomer with 200,000 year half-life while its ground state has a half-life of 3.718 days. It is also odd-odd and well-deformed nucleus, so should exhibit a variety of other interesting nuclear-structure phenomena. However, the available nuclear data is rather sparse; for example, the energy of the isomer is only known to within + 7 keV and, with the exception of the J?=1- ground state, every proposed level is tentative in the ENSDF. Previously, Prompt Gamma Activation Analysis (PGAA) was utilized to study ^{nat}Re with ^{186,188}Re being produced via thermal neutron capture. Recently, an enriched ^{185}Re target was irradiated by thermal neutrons at the Budapest Research Reactor to build on those results. Prompt (primary and secondary) and delayed gamma-ray transitions were measured with a large-volume, Compton-suppressed HPGe detector. Absolute cross sections for each gamma transition were deduced and corrected for self attenuation within the sample. Fifty-two primary gamma-ray transitions were newly identified and used to determine a revised value of the neutron binding energy. DICEBOX was used to simulate the decay scheme and the total radiative thermal neutron capture cross section was found to be 97 +- 3 b

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