Raptis, E.; Varsos, D.
Some residual properties of certain HNN extensions. (English)
Bull. Greek Math. Soc. 28, 81-87 (1987).

A group G is called residually P, for P a group property if for each $g \in G$, there exists an $N \triangleleft G$ such that $g \notin N$ and G/N has property P. Let $G = <t, K \mid t^{-1}At = B, \phi >$ be an HNN extension with A, B associated subgroups and $\phi : A \to B$ the associated isomorphism. The authors study certain residual properties of G in the case where K is a finitely generated abelian group. They consider special cases (for example when $A \cap B$ is of finite index in both A and B) and give conditions for G to be residually finite or to be residually free or residually nilpotent. In certain cases a characterization is given. For example, if G has the presentation $G = <t, a_1, a_2, ..., a_r \mid t^{-1}a_i t = a_i^{p_i}, i = 1, 2, ..., r, [a_i, a_j] = 1, i \neq j >$ then G is residually nilpotent if and only if $p_i \neq 2$, $i = 1, 2, ..., r$.

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