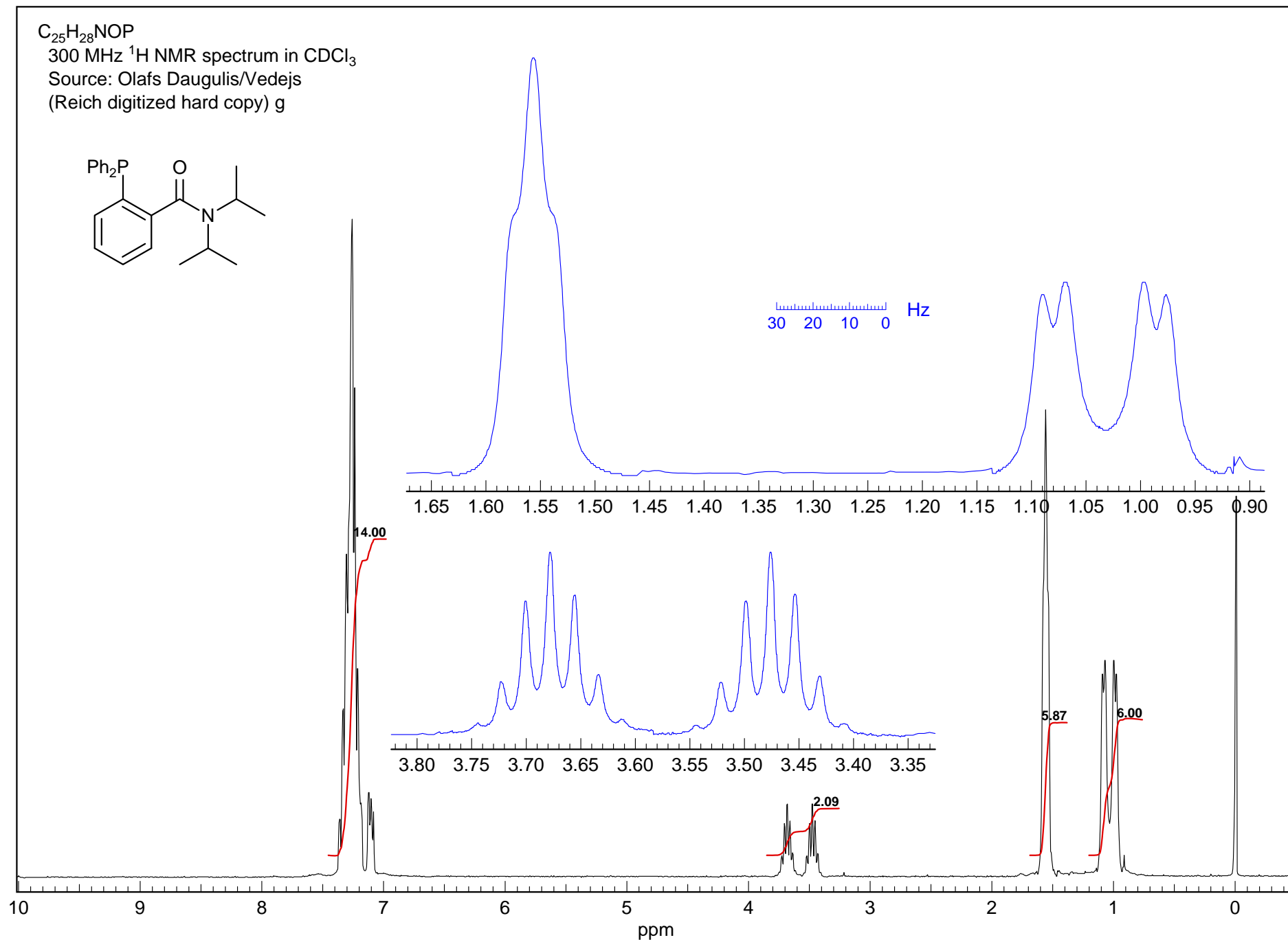


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(a) Restricted rotation around the amide bond **A** is slow on the NMR time scale at room temperature, this makes the two isopropyl groups diastereotopic, hence two methine protons. (b) There is also slow rotation around the Ar-C=O bond **B** due to steric effects (atropisomerism). This makes the molecular framework chiral, and thus the two methyl groups of both (different) isopropyl groups become diastereotopic, hence a total of four methyl doublets. Although a variable temperature experiment was not done, the broadened methyl signals indicates that rotation around bond **B** is starting to occur on the NMR time scale (at ca 12 times per second). At higher temperatures first the diastereotopic methyl group would coalesce as rotation around bond **B** goes faster giving two doublets. Then the two methynes would coalesce (as well as the two methyl doublets) when amide bond rotation round **A** becomes fast, giving just one methyne and one methyl doublet.

