



CATERPILLAR 1R TEST RESULTS

JULY 12, 2001

CATERPILLAR 1R TESTS



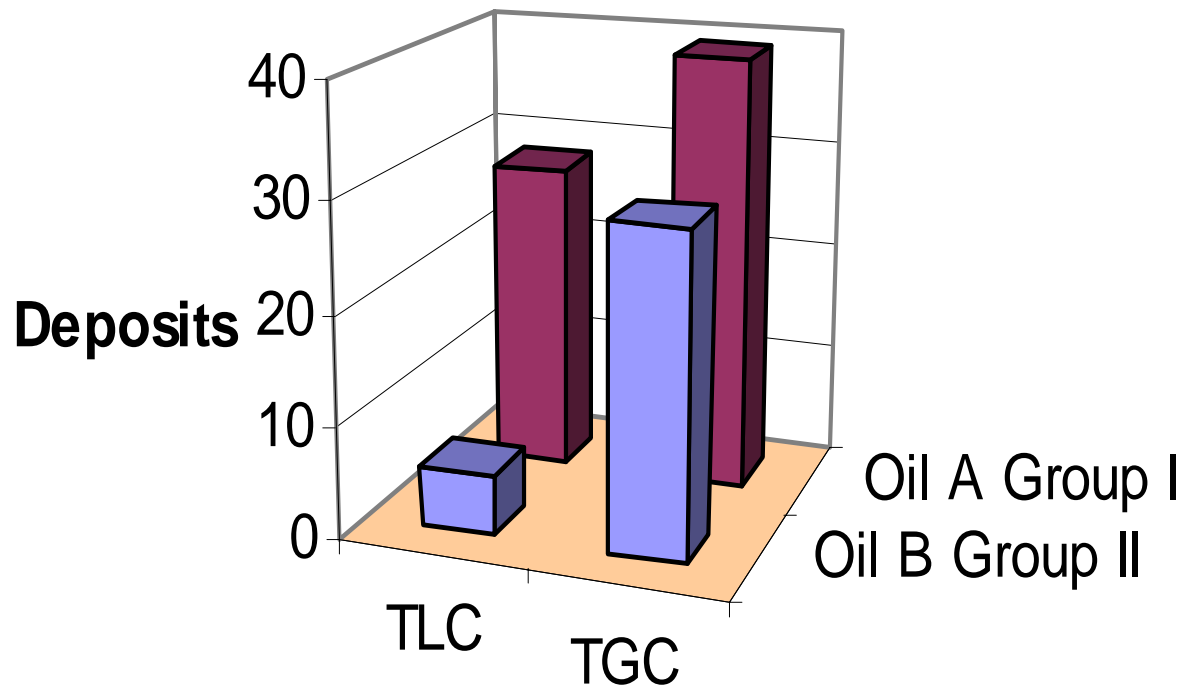
- **Base Oil Comparison**
- **Oxidation Effects**
- **Summary**

CAT 1R TEST RESULTS

Group I vs Group II base oils 15W-40 same Additive System



CAT 1R Deposits vs Base Oil Type

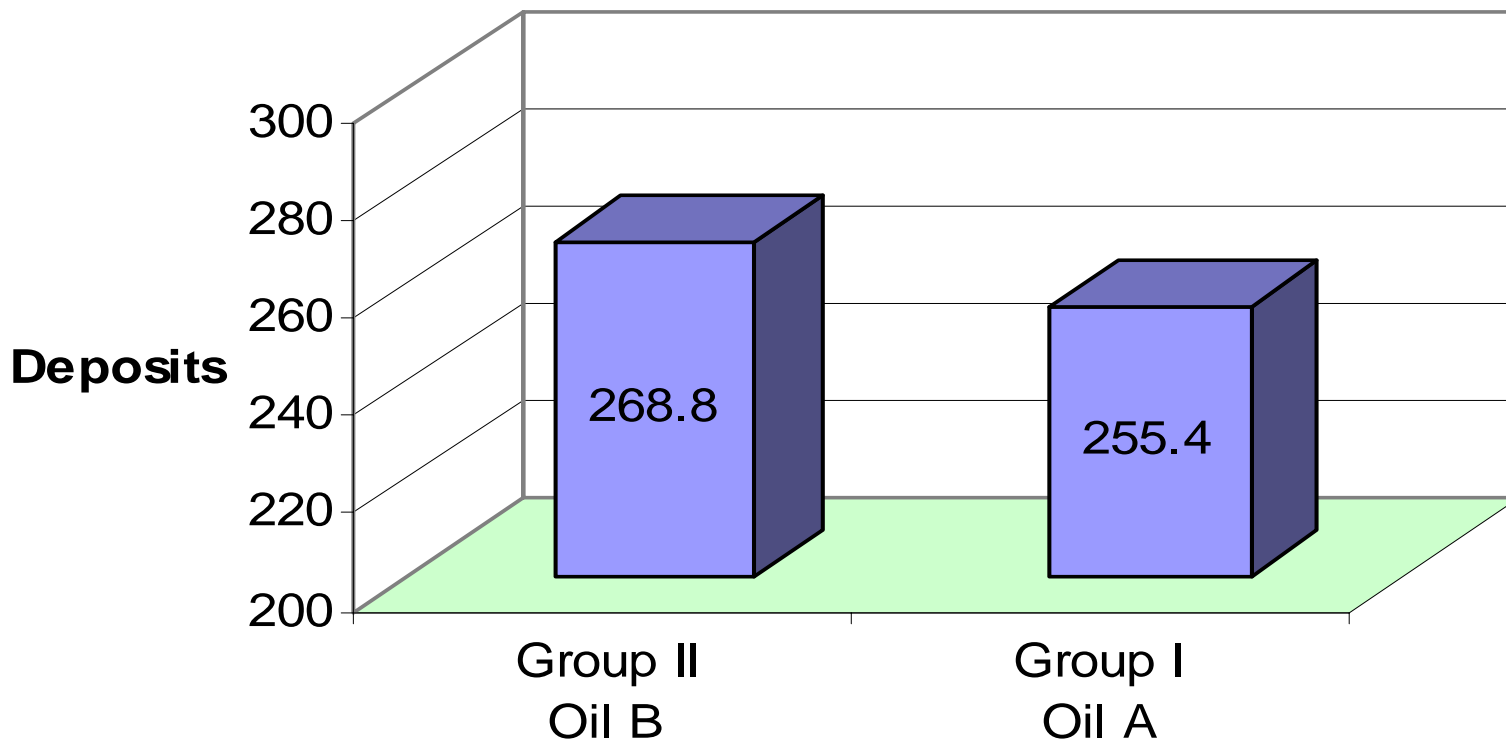


CAT 1R TEST RESULTS

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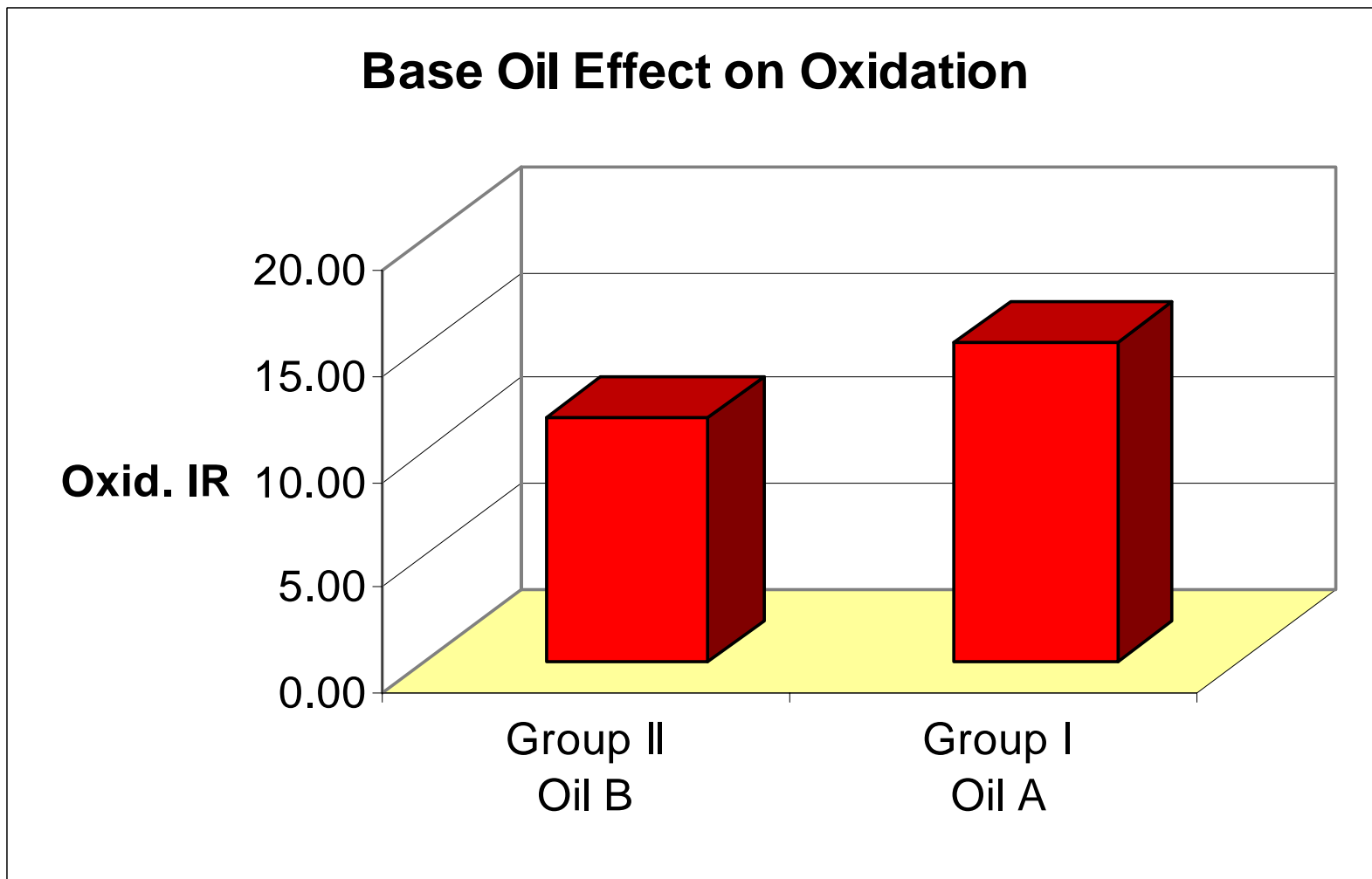


WDP vs Base Oil Type



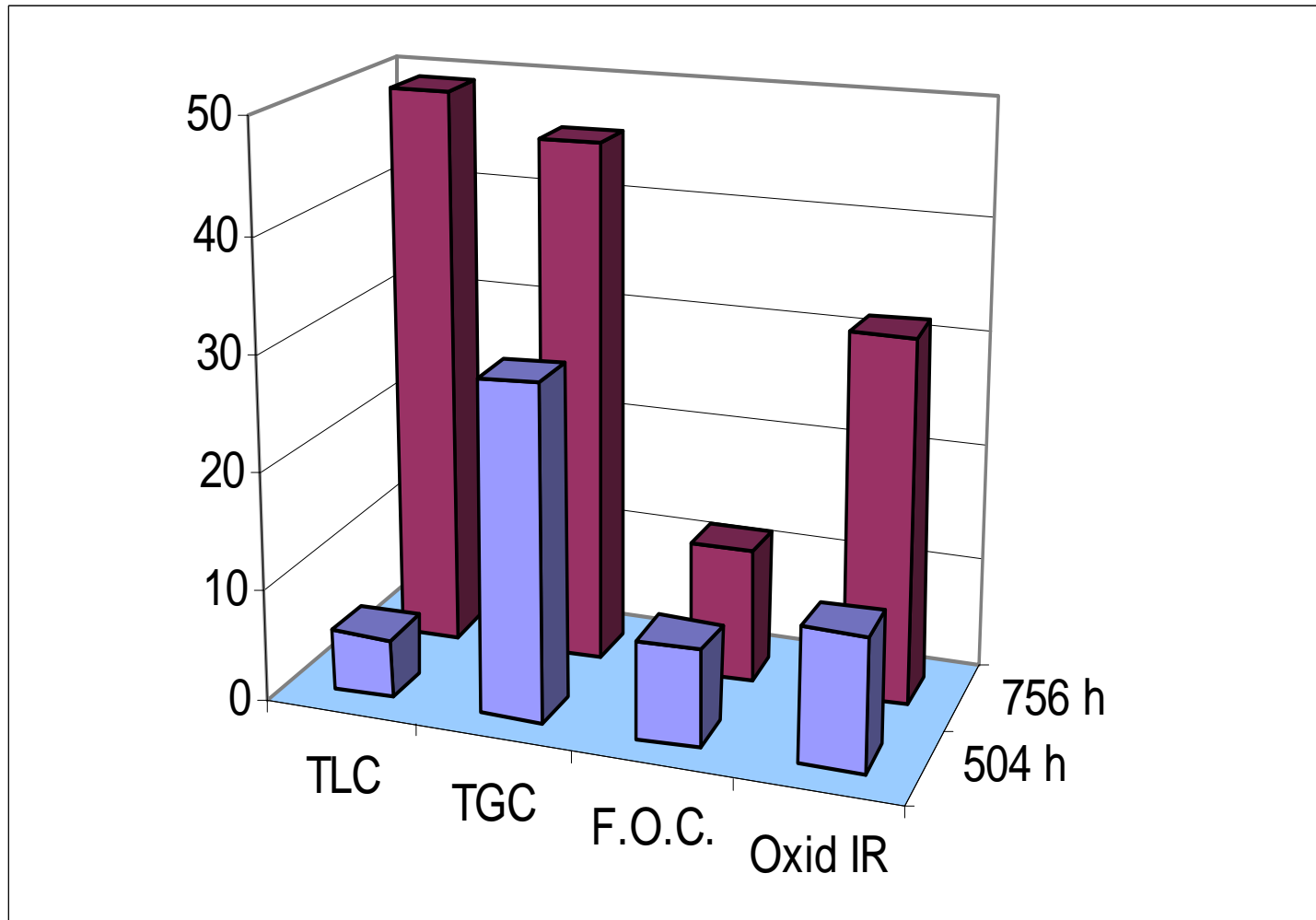
CAT 1R TEST RESULTS

Group I vs Group II base oils 15W-40 same Additive System



CAT 1R TEST RESULTS

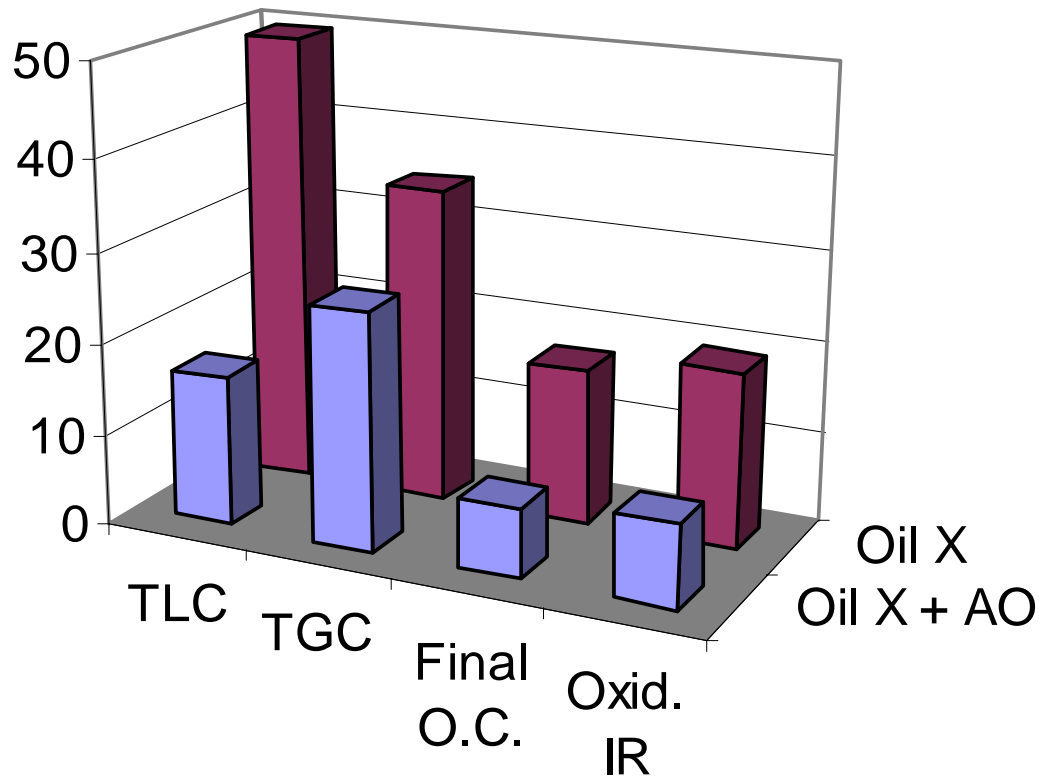
Oil B at Extended Hours



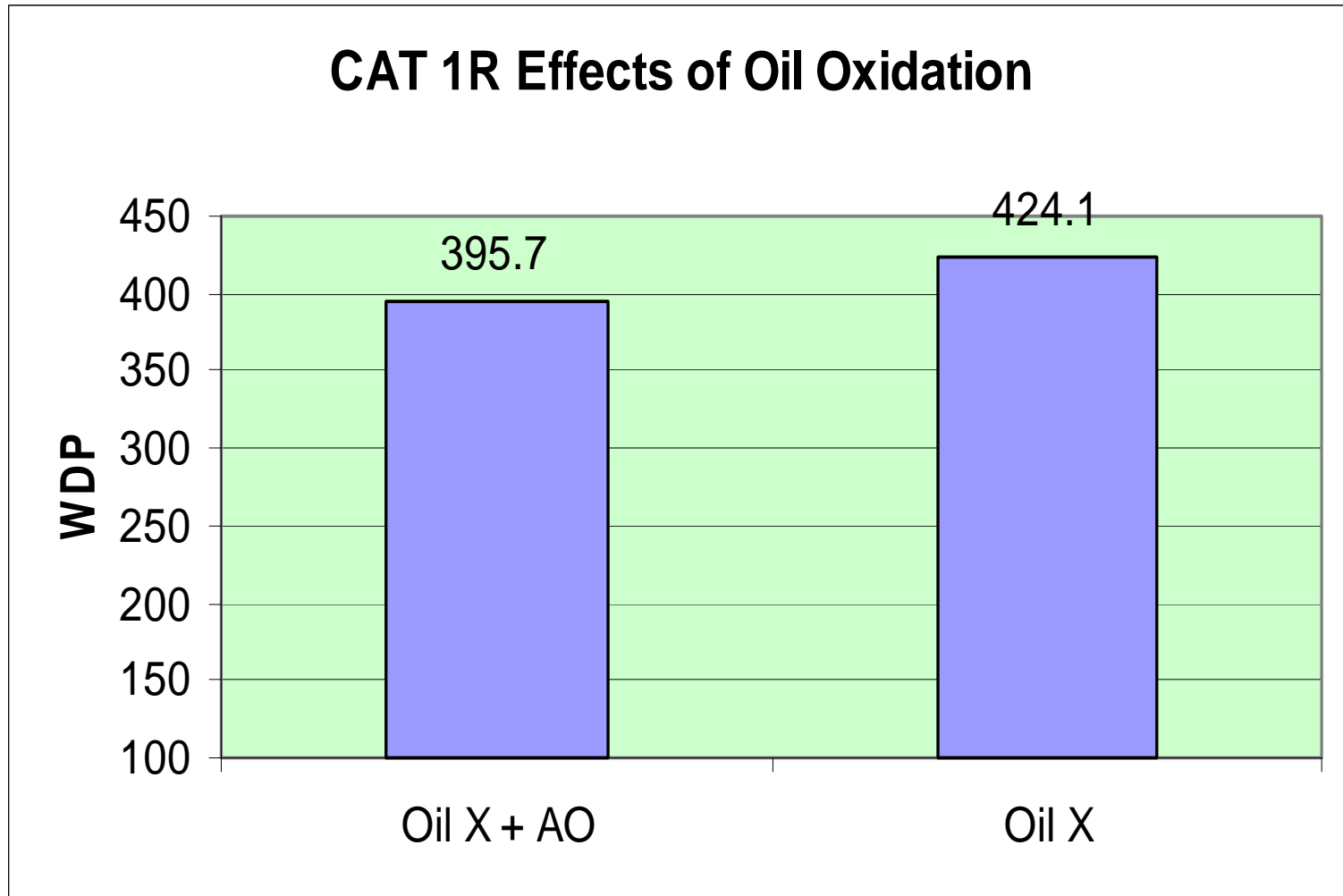
CAT 1R Test Results



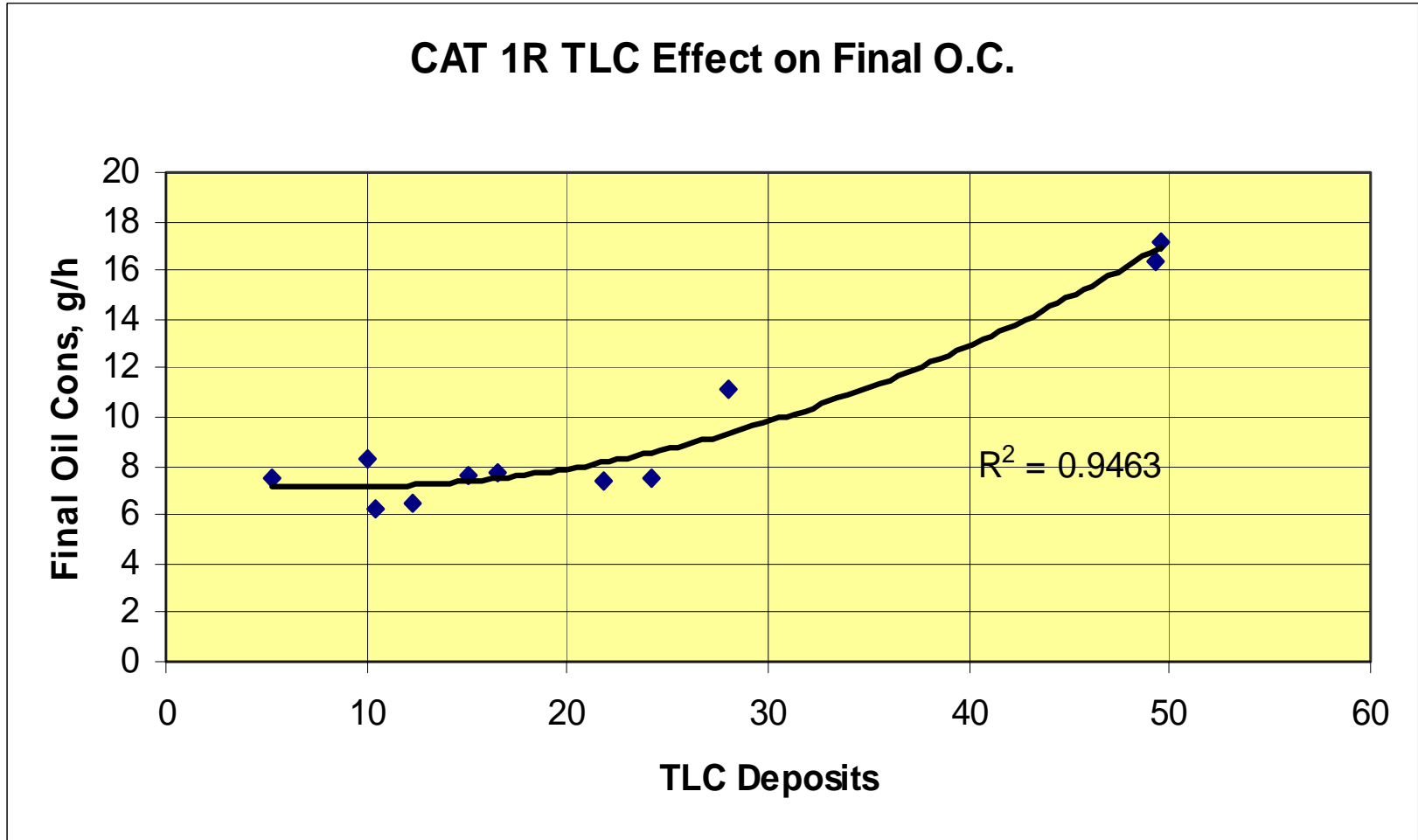
CAT 1R Effects of Oil Oxidation



CAT 1R Test Results



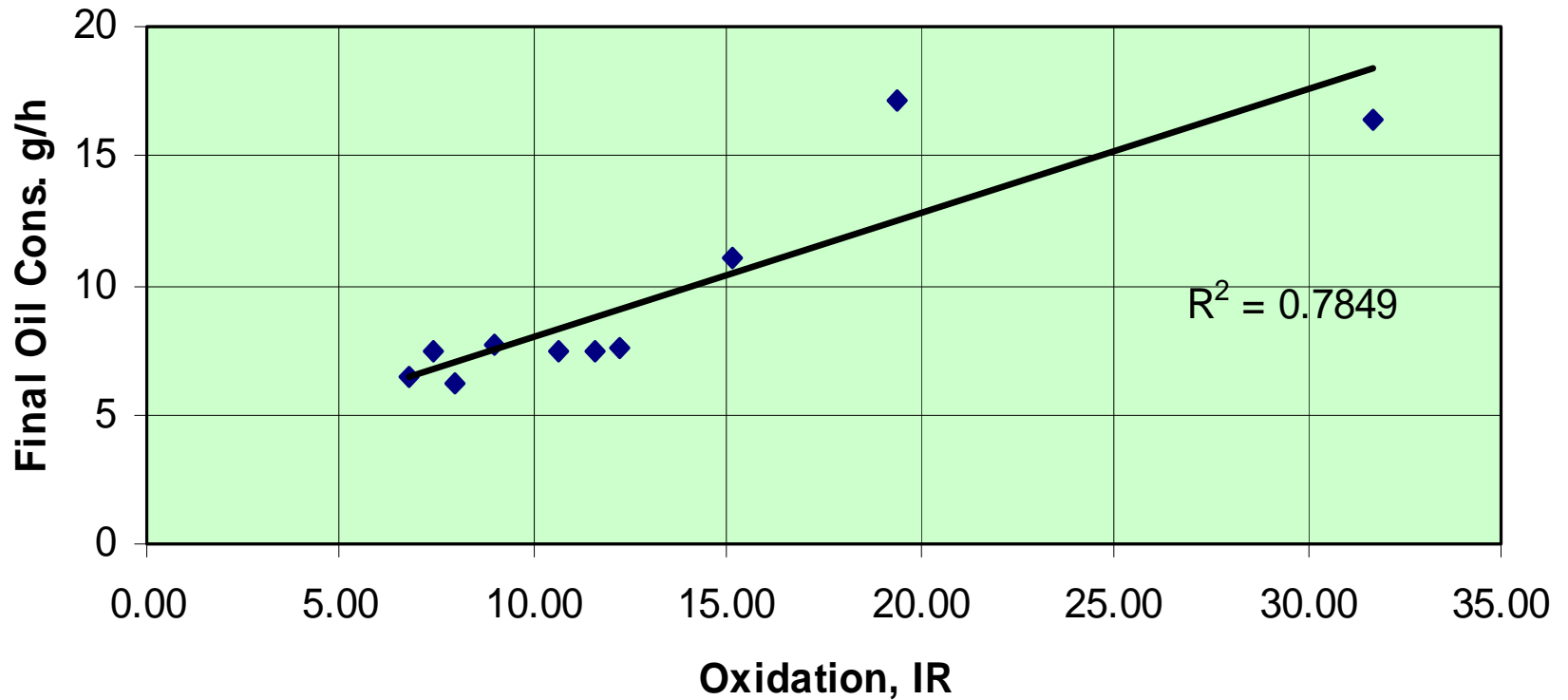
CAT 1R Test Results



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CAT 1R Effect of Oxidation on Final O.C.



Summary



- **Preliminary data does not support the CAT 1R read across from Group II to Group I base oils.**
- **CAT 1R TLC and TGF deposits are increased with increased oil oxidation. WDP does not separate oils on oxidation level.**
- **CAT 1R oil consumption increases with increasing TLC deposits.**
- **CAT 1R read across should be from the least oxidation stable case to the most. Perhaps it could be based on base oil saturates.**