

ATC

CODE OF PRACTICE

A Code of Practice devised by the members of the European lubricant additive industry. The Code is intended to aid continuous improvement in the development of engine lubricants and the consistency and validity of performance claims made for them.

The Code specifies engine tests, procedures and record keeping.

January 2010

What's New in the Mmm YYYY version of Code?

Content Changes –Highlighted in the document in *red italics*

Letter of Intent Revisions

- The Letter of Intent has been revised. There are no longer separate Sponsor and Lab versions of the letter. Affected sections are:
 - *Contents Section*
 - *Sections B.5, C.1, C.4, and C.5*
 - *Glossary and Definition of Terms*
 - *Appendix 1: Forms*
 - *Form B.1 has been revised*
 - *Form C.1 has been deleted*
- Please note that the revisions to Form B.1 Letter of Intent are not shown in red italics as are other revisions to the Code. This is to allow the form to be used for submitting the Letter of Intent to the ERC.

CEC Test Procedure Designations

- Corrections to the CEC test procedure designation for the 646LA can be found in the tables in:
 - *Sections D.2, E.1, and E.2*

Current test listings

- Removal of the XUD11BTE, OM364LA, 441LA, OM602A, and VWICTD from the current test listings and adding it to the previous test listings can be found in the tables in:
 - *Section D.2*

Inclusion of Non-CEC Parameters in the ERC Database

- Protocol has been added for the inclusion of non-CEC approved parameters:
 - *New Section D.6 has been added*
 - *Previous Section D.6 Classification of Operationally Valid and Completed Test Data has been re-numbered as Section D.7*

Uncontrolled Circumstances

- Instructions for registering a test during an uncontrolled circumstance such as a power, phone, or network failure are detailed in:
 - *New Section E.9*

Viscosity Modifier Interchange

- Inclusion of the OM501LA and OM646LA tests in the VM Interchange is detailed in:
 - *Table H.1: VM Interchange*

Programme Extensions

- Revision and clarification of programme extension guidelines are detailed in:
 - *Sections H.11 and H.15*

COMMENTS OR QUERIES:

In the event of comments on or queries arising from this Code of Practice and its interpretation, then the matter shall be presented by those concerned to the ATC Main Committee for adjudication.

The Chairman of ATC may be contacted at:

ATC Sector Group,
CEFIC,
Avenue E van Nieuwenhuyse 4,
Box 1, B-1160 Bruxelles,
Belgium.

ISSUE, DISTRIBUTION, AND UPDATE

This Code of Practice is available only in electronic form at the ATC-ERC website, *www.atc-erc.org*. It may be downloaded and printed through the use of Adobe Acrobat Reader software, also available at the website.

This Code will be updated, as changes are required. Changes will be highlighted in italics and will be summarised in a separate document. All notification of changes will be via e-mail. To have your name included on the distribution list, please send your e-mail address to:

*Jeff Clark, ATC European Registration Centre
Email : jac@atc-erc.org*

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Section A EXECUTIVE SUMMARY

- a.1 This Code of Practice has been voluntarily devised by representatives of member companies of the Technical Committee of Petroleum Additive Manufacturers in Europe (ATC). Compliance with the Code is voluntary and is not restricted to ATC members. The Code is intended to encourage both the consistent and precise operation of engine testing and the consistent reporting of results during the performance evaluation of automotive lubricant formulations. It is also intended to generate a body of reference data and knowledge concerning the precision and consistency of operation of test methods embraced by the Code.
- a.2 The Code distinguishes between:
Test Sponsors who commission candidate lubricant test work with Test Laboratories under the Code either for themselves or for their clients; and
Test Laboratories which conduct candidate tests under the Code on behalf of Test Sponsors and also conduct reference lubricant test work.
- a.3 Test Sponsors and Test Laboratories are required to register with the European Registration Centre (ERC), which forms a part of the European Engine Lubricant Quality Management System (EELQMS), and those who wish to be in compliance must undertake to comply with all of the requirements of the Code by means of annual Letters of Intent. An audit process forms part of the requirements. See [Section B](#) and [Section C](#). Test Sponsors are strongly encouraged to provide Letters of Intent.
- a.4 The Code is based upon the ISO 9000 international quality system. All participating Test Laboratories shall comply, or be in the process of complying with this system. Only Test Laboratory facilities that have been accredited to the international standard ISO17025 for the relevant procedures shall be used under the Code. See [Section C](#).
- a.5 The Code specifies internationally recognised engine tests which must be operated to the prescribed procedures by participants of the Code. Participating Test Laboratories must be active members of any relevant bodies which are developing or monitoring listed engine test procedures. See [Section C](#) and [Section D](#).
- a.6 All reference tests, and candidate lubricant engine tests conducted under the Code which are intended to support candidate lubricant performance claims, must be registered with ERC before testing begins. At the completion of registered test work, the Test Validity Statement together with a summary of results must be declared both to ERC and to the Test Sponsor. A specified formulation/test coding sequence must be used to facilitate tracking of test programmes. See [Section E](#).
- a.7 The Code specifies minimum levels of information which must be disclosed by Test Laboratories to both ERC and to Test Sponsors. See [Section F](#).

Section A continued

- a.8 The Code specifies the minimum contents of the Candidate Data Package which must be used by Test Sponsors to declare to their customers the results of testing carried out under the Code. This information will include disclosure of any formulation changes which may have been made during the development programme and which support the final candidate formulation. Permissible formulation modifications are specified in the Code. See [Section G](#) and [Section H](#).

- a.9 The Code employs precisely defined terms to aid consistent interpretation. See [Section I](#).

Section B**TEST SPONSOR REQUIREMENTS**

REGISTRATION OF TEST SPONSORS

b.1 Organisations (Test Sponsors) wishing to commission lubricant engine testing under the Code of Practice shall apply to ERC (European Registration Centre) for a Test Sponsor Identity Code (Sponsor ID).

b.2 Test Sponsors are encouraged to sign a Letter of Intent; this should be submitted to ERC.

It is implicit within the Letter of Intent that Test Sponsors authorise ERC a) to include their industry reference oil test results in the release of unattributable test data; and b) to conduct analysis of their candidate test results for inclusion in release of unattributable test data. No individual or actual candidate results will be published.

A Test Sponsor's continued use of their Sponsor ID authorises ERC to include their candidate test results and any reference test results within release of unattributable test data as specified above. (This has been implicit since April 1st 1999).

Any Test Sponsor or Test Laboratory may request an ID and password to access the ATC-ERC website in order to review unattributable reference oil data.

b.3 The Letter of Intent confirms that all candidate lubricant engine testing with any of the engine test procedures listed in this Code and commissioned anywhere in the world will be conducted under the conditions of the Code. Similarly, all reference lubricant engine testing for the prescribed methods will be conducted under the same conditions.

Organisations may elect to run lubricant engine tests for research purposes outside the remit of this Code. Such research lubricant tests, for example, need not be registered but their results cannot then be used as primary support in an ATC Data Set or Programme.

b.4 Whilst it is not obligatory for Test Sponsors to be certified as complying with the ISO 9000 system, it is recommended that such certification should be sought.

Section B continued

TEST SPONSOR COMPLIANCE AND AUDIT PROCESS

- b.5 The Code requires that compliance or the intention to comply be notified to ATC before any claims to follow the Code are made. A standard Letter of Intent shall be delivered to ERC before April 1st of each year; each annual period shall be from 1st April to 31st March. The required format of the letter is shown in [Appendix 1, Form B.1: "Letter of Intent"](#).
- b.6 In order to comply with this Code of Practice, Test Sponsors shall conduct an annual audit (see [Page B.3](#)) which must be based on the Self Evaluation Check List of Compliance shown in [Appendix 1, Form B.2](#). This audit may be carried out by an internal or external auditor.
- b.7 The audit period shall be from April 1st to March 31st and the audit shall be completed by June 30th, using the Self Evaluation Check List of Compliance.
- b.8 The Test Sponsor must request ERC to provide, in confidence and to the auditor and Test Sponsor only, a list of all registered tests conducted by the applicant Test Sponsor during the audit period and for review during the audit process.
- b.9 Compliance with the Code will be determined by the absence of any Stage I (no compliance) and any Stage II (substantial non-compliance) entries on the completed Self Evaluation Check List of Compliance ([Form B.2](#)) which forms part of the audit process.
- b.10 The completed Self Evaluation Check List of Compliance must have been delivered to ERC, by July 1st annually. Failure to provide a Self Evaluation Check List of Compliance to ERC by July 1st will be considered a Compliance Stage I category (no compliance with the Code). The compliance period begins April 1st of new year and terminates on March 31st of the following year.
- b.11 A Test Sponsor which has not registered any candidate lubricant tests during the compliance period will be considered to be in compliance by having filed a Letter of Intent at ATC and ERC and by the confirmation by ERC that no such tests have been registered by that Test Sponsor in that period.
- b.12 Where a Test Sponsor is found not to be in compliance, as a result of an audit, then a period of four months will be allowed for rectification. Before the end of this period the Test Sponsor shall repeat the audit and provide a new Self Evaluation Check List of Compliance to ATC. During the four-month period, the Test Sponsor shall be considered to be in compliance with respect to client programmes, subject to the outcome of the repeated audit.

Lack of compliance resulting solely from late submission of the Check List may be rectified by submission in this four-month period; a repeat of the audit is not required in this instance.

Section B continued

- b.13 When requested by a client company, a Test Sponsor must supply evidence of compliance.
Upon request, a copy of the signed Self Evaluation Check List of Compliance must be shown to potential clients of the Test Sponsor and be available for other audit purposes.

AUDIT GUIDE TO THE COMPLETION OF THE
SELF EVALUATION CHECK LIST OF COMPLIANCE

Before beginning to check the items on the check list shown in [Appendix 1, Form B.2](#):

- Verify the existence of the Letter of Intent;
- Confirm that up to date controlled copies of the ATC Code of Practice and ATC Bulletins are available.
- Obtain, from the Test Sponsor, a list of Candidate Data Packages issued for the audit period.
- Obtain a list of all registered tests conducted by the Test Sponsor for the audit period.

1. Test Registration.

- 1.1 Verify all test registration documentation.
- 1.2 Confirm that the test registration date and time preceded the start of the test.
- 1.3 Verify the Sponsor ID.
- 1.4 Verify the use of the Cancellation Form, if one was used.
- 1.5 Confirm reasons for cancelled tests were given.
- 1.6 Verify the use of Correction of Error Form, if one was used.

2. Test Validity.

- 2.1 Confirm that the Test Validity Statement for each test report is complete.
- 2.2 Verify the outcome of each registered test on the Test Validity Statement and/or ERC Summary as one of the following categories:

Up to September 1997:

- Cancelled; Discontinued/Aborted; Pending; Completed

From September 1997:

- Operationally valid and completed (and, from October 2000, on the ERC Summary, further shown as "in accordance" or "not in accordance").
- Operationally valid and stopped by sponsor
- Operationally valid and terminated
- Operationally invalid and completed
- Operationally invalid and aborted
- Cancelled; Pending

- 2.3 Confirm reasons for discontinued/aborted tests were given.

Section B continued

- 3. Use and Treatment of Data.
 - 3.1 Confirm agreement of engine test data reported in the ATC Candidate Data Package and the ERC Summaries.
 - 3.2 Confirm that all supporting tests in the Candidate Data Package fall into one of three categories, depending on completion date:

| | |
|------------------------------|--|
| Up to September 1997 | Completed |
| September 1997-December 1999 | Operationally valid and completed |
| From October 2000 | Operationally valid, completed (and in accordance) |

- 4. Validity or Interpretation Questions.
 - 4.1 Confirm the inclusion in the ATC Candidate Data Package of any opinions, if sought, regarding the validity or interpretation of particular tests or test results.
- 5. Formulation Modifications.
 - 5.1 Confirm that formulation modifications are clearly identified for data supporting the final candidate formulation.
 - 5.2 Confirm that appropriate data as specified in Section G are given for each modification supporting the final candidate formulation.
 - 5.3 Confirm that a complete description is included of the initial candidate formulation(s) and all final candidate formulation(s) in all applicable SAE viscosity grades.
- 6. Programme Extensions.
 - 6.1 Confirm that Programme Extensions and any additional SAE viscosity grades have been linked to an ATC Programme.
 - 6.2 Where formulation modifications have been used, verify that, where relevant, items within 1.1 to 6.1 above are correctly documented.
 - 6.3 Confirm that Viscosity Grade Readacross and Base Oil Interchangeability comply with the ATIEL Code of Practice.
 - 6.4 Confirm that any VM Interchange complies with the ATC Code of Practice (Section h.13).

Section C TEST LABORATORY REQUIREMENTS

REGISTRATION OF TEST LABORATORIES

- c.1 Test Laboratories wishing to conduct lubricant engine testing under the Code of Practice shall apply to ERC for a Test Laboratory Identity Code (Laboratory ID). ERC will only issue new Laboratory ID Codes on receipt of a valid Test Laboratory Letter of Intent and will only accept test registrations from Test Laboratories with current Letters of Intent. The required format of the letter is shown in [Appendix 1, Form C.1: "Letter of Intent"](#).
- c.2 All Test Laboratories wishing to register and operate within this Code must be certified as being in compliance with the ISO 9000 system of quality practices.
- c.3 In order to be eligible for registration, the Test Laboratory must be an active participant in the appropriate CEC Working Group where such a group is responsible for the development, refinement or monitoring of a CEC engine test procedure which is listed in this Code of Practice.
- c.4 It is implicit within the *Letter of Intent (Form B.1)* that Test Laboratories authorise ERC to include their industry reference oil test results in the release of unattributable test data (these data are available on the [ATC-ERC website](#) - see Bulletin 1/99).
Any Test Sponsor or Test Laboratory may request an ID and password to access the ATC-ERC website in order to review unattributable reference oil data.

ACCREDITATION AND COMPLIANCE OF TEST LABORATORY FACILITIES

- c.5 Each Test Laboratory must provide an annual Letter of Intent; the required format of the letter is shown in [Appendix 1, Form B.1: "Test Laboratory Letter of Intent"](#). This letter must be delivered to ERC before April 1st of each year; each annual period shall be from 1st April to 31st March.
- c.6 Engine test facilities to be used within this Code must be accredited to ISO 17025 for the appropriate tests. Such accreditation must have been granted by an organisation which has demonstrated that it operates in accordance with the requirements of ISO/IEC Guide 58.

An organisation that has been evaluated by EAL (European Cooperation for Accreditation of Laboratories) and is a signatory to the EAL multilateral agreement (MLA), or has a bi-lateral agreement with the signatories to the EAL MLA, meets this requirement
- c.7 The Test Laboratory must be an active participant in the appropriate CEC Working Group where such a group is responsible for the development, refinement or monitoring of a CEC engine test procedure which is listed in this Code of Practice.

Section C continued

- c.8 Engine test stands employed under this Code of Practice must have a unique identity. The stand identity code shall be shown in the test registration, the data package and other documentation relating to a test/result.
- c.9 Only engine test stands which have provided reference lubricant data which fall within the acceptance bands for each parameter (as developed by the CEC Working Group, when applicable) may be used for candidate lubricant testing. The Test Laboratory must be able to produce such reference data which have been generated with the same test procedure and in the same test stand. The reference data must have been derived from a relevant CEC round robin programme, and/or must have been generated within the referencing protocol stipulated by the CEC Working Group.
- c.10 Each Test Laboratory, in order to be in compliance with the Code, will conduct all candidate lubricant engine testing for Test Sponsors, and all reference lubricant engine testing, according to the requirements of the Code applying at the time of test registration.
- c.11 All Test Laboratories, in compliance with this Code of Practice, are deemed to be equal.

AUDIT PROCESS FOR TEST LABORATORIES

- c.12 The audit process for Test Laboratories will be as defined under the applicable industry standards determined by ISO 17025.
- c.13 In order to reconcile their records for audit purposes Test Laboratories shall request ERC to provide, in confidence and to the auditor and Test Laboratory only, a list of all tests registered by the Test Laboratory during the audit period.

CLASSIFICATION OF OPERATIONALLY VALID AND COMPLETED TEST DATA

The attention of Test Laboratories is drawn to Section D, and in particular paragraph d.7 on [Page D.3 of 4](#).

Section D LISTED ENGINE TEST PROCEDURES

- d.1 Engine tests conducted under this Code must comply completely with the latest test procedures published by the CEC Secretariat or relevant project group.
- d.2 The following engine test procedures are presently or have previously been included within the Code of Practice. The ATC designation for each test shall be used in all documentation required by this Code.

| Current Test Procedures | Test Description | ATC Designation | Date of Inclusion |
|-------------------------|---|-----------------|-------------------|
| CEC L-38-94 | TU3M Valve Train Scuffing, Wear | TU3MS | 01Oct95 |
| CEC L-53-95 | M111 Black Sludge | M111SL | 01Oct95 |
| CEC L-54-96 | M111 Fuel Economy Improvement | M111FE | 01Mar98 |
| CEC L-78-99 | VWDI Direct Injection Diesel Performance | VWTDI2 | 22Nov99 |
| CEC L-88-02 | TU572 Oil Viscosity Increase, High Temperature Deposits and Ring Sticking | TU572 | 1Nov02 |
| CEC L-93-04 | DV43E Oil Dispersion at Medium Temperature for Passenger Car DI Diesel Engines | DV4E3 | 31Dec04 |
| <i>CEC L-099-08</i> | OM646LA Passenger Car Diesel Engine Wear Test | 646LA | 01Nov07 |
| CEC L-101-07 | OM501LA Bore Polishing & Piston Cleanliness Test | 501LA | 16Nov07 |

| Previous Test Procedures | Test description | ATC Designation | Date of Inclusion | Last Allowable Registration |
|--------------------------|--|-----------------|-------------------|-----------------------------|
| CEC L-42-A-92 | OM 364A Bore Polishing/Piston Cleanliness | OM364A | 01Oct95 | 15Sep99 |
| <i>CEC L-42-T-99</i> | <i>OM 364LA Bore Polishing/Piston Cleanliness</i> | <i>OM364LA</i> | <i>01Jul99</i> | <i>23Dec09</i> |
| <i>CEC L-46-T-93</i> | <i>VWICTD Ring Sticking and Piston Cleanliness</i> | <i>VWICTD</i> | <i>01Oct95</i> | <i>31Oct08</i> |
| <i>CEC L-51-98</i> | <i>OM 602A Wear</i> | <i>OM602A</i> | <i>01Oct95</i> | <i>23Dec09</i> |
| <i>CEC L-52-97</i> | <i>OM441LA Bore Polishing/Piston Cleanliness and Turbocharger Performance</i> | <i>441LA</i> | <i>01Mar98</i> | <i>23Dec09</i> |
| CEC-L-56-T-95 | XUD 11ATE Medium Temperature Dispersivity | XUD11 | 01Oct95 | 01Mar99 |
| <i>CEC L-56-T-98</i> | <i>XUD11BTE Medium Temperature Dispersivity</i> | <i>XUD11B</i> | <i>15Feb99</i> | <i>01Jun07</i> |
| CEC-L-78-T-97 | VWDI Direct Injection Diesel Performance | VWTDI | 01Mar98 | 01Mar02 |
| CEC-L-88-X-01 | TU5L4X Oil Viscosity Increase, High Temperature Deposits and Ring Sticking | TU5L4 | 26Mar01 | 01Mar02 |
| CEC-L-88-T-00 | TU5JP Oil Viscosity Increase, High Temperature Deposits and Ring Sticking | TU5JP | 26Mar01 | 1Nov02 |
| CEC-L-88-X-01 | TU572X Oil Viscosity Increase, High Temperature Deposits and Ring Sticking | TU572X | 27Nov01 | 1Nov02 |
| CEC-L-55-T-95 | TU3M High Temperature Deposits, Ring Sticking, Oil Thickening | TU3MH | 01Oct95 | 01Dec03 |

Section D continued

d.3 The methodology for development of CEC tests that had been in effect with the introduction of the ATC Code of Practice was replaced in 2004 with a process that ensures delivery of engine tests of demonstrated known and acceptable reproducibility.

- In the original process, all candidate tests for registration had (under normal circumstances) to be run using test procedures having Tentative ('T') or Approved ('A') status. When an Experimental ('X') status test procedure was being submitted for 'T' status, reference tests offered as part of the round robin in support of this submission could be registered within this Code of Practice. Furthermore, candidate tests run on a test stand subsequent to its participating in a round robin, but prior to the test procedure attaining 'T' status, could be registered with ERC. Test data on an 'X' status test had the potential to be used in candidate data packages, and may eventually have been included in the listing and data section of the ERC Summary. Following acceptance by ATC of a new test into the Code, 'X' status test data was assessed by ATC for eligibility. If considered eligible, the data became accessible for inclusion in ERC Summaries and hence in candidate data packages.

Eligible tests were defined as:

- Reference tests run to the test procedure that was subsequently granted 'T' status after the completion of the round robin.
- Candidate tests that were run to the test procedure that was subsequently granted 'T' status and on a test stand that met all of the requirements for referencing as defined in that procedure. (This specifically excludes test stands that gave unacceptable reference results).
- Candidate tests that were run to a version of the procedure that was considered essentially the same as the one accorded 'T' status.

When a new test replaced an existing test that was already in the Code then there was a final date defined for acceptance of registration of the old test. No new registrations were accepted after this date.

As of 2004, there is a phased development of tests resulting in the introduction of a fully approved test with a corresponding CEC Test Method. Phase 1 is development until repeatability and discrimination are satisfactory and a draft method has been produced in CEC format. Phase 2 includes demonstration of acceptable reproducibility and establishment of a precision statement. This leads to test method publication. ATC will establish guidelines for reference and candidate registrations and testing whenever a new test is introduced.

Section D continued

- d.4 Under normal circumstances, all candidate tests for registration must be run using test procedures having Tentative ('T'), or Approved ('A') status (under the previous method for development of tests), or fully-approved status under the current method for development of tests, as above.
- d.5 ATC reserve the right not to include a new test in the Code; in the event of such a decision, ATC will advise its industry partners of the reason(s) for the exclusion.

- d.6 *INCLUSION OF NON-CEC APPROVED PARAMETERS IN THE ERC DATABASE*
ACEA engine tests run under the ATC Code of Practice have been registered and test data have been collected in the ERC database since the inauguration of EELQMS in 1996. Data dictionaries are prepared for each CEC engine test included in the ACEA Oil Sequences. The data collected include both CEC approved parameters and non-CEC approved parameters along with certain operational data thought to be useful by the relevant CEC Working Groups when investigating test precision.

As data are collected over time the ATC PTS subgroup uses the data in the database to investigate the precision of non-CEC parameters. The ATC code of practice continues to allow collection of non-CEC parameter data via the ERC database and PTS will continue to carryout out investigations to ascertain whether Non-CEC parameters have achieved the required precision to be endorsed by ATC and submitted to CEC for acceptance. A second route to accepting these types of parameters is via investigations by the CEC Working Groups as in time they will have collected sufficient data from the ERC reference oil database to show whether precision has improved enough to be acceptable by CEC.

Unless CEC has endorsed these non-CEC parameters using the Investigation procedures outlined above then any laboratory running these Engine Tests and reporting 'non-CEC approved parameters' should add a disclaimer to their Test Reports stating that these results are Non-CEC accepted and included for reference only.

- d.7 CLASSIFICATION OF OPERATIONALLY VALID AND COMPLETED TEST DATA
Table 1 shows the criteria that the laboratories should use to determine how to complete the declarations on the Test Validity Statement. Note: ERC will reconcile information provided by the laboratory

Where a laboratory runs tests that do not fully comply with the Code due to absence of acceptable reference data (for candidate tests), the test data will be classified as not in accordance with the Code (see the fourth declaration on the Test Validity Statement, [Appendix 1, Form F.1](#)).

Acceptable reference data are always required before a subsequent test can be considered to be in accordance with the Code EXCEPT for the tests that are being run to generate these acceptable reference data. It is not necessary to answer the 'Acceptable Reference Data' question for these tests (see p.F.2, third declaration).

Section D continued

Acceptable reference tests must be operationally valid, run according to ATC Code of Practice, and yield results within the acceptance bands for all parameters of that test (see declaration 5.a.2 on the Test Validity Statement, [Appendix 1, Form F.1](#)).

For 'X' status candidate tests, these data may not be used to support Candidate Data Packages until they are subsequently re-classified by ATC as eligible for inclusion in the ERC Summary.

Table 1

| Test Registered at ERC | Test Stand | | CEC Test Status | | | Data In Accordance with Code | Eligible for Inclusion in ERC Summary | Note |
|------------------------|---------------------------|-----------|------------------------|-------------------|------------|------------------------------|---------------------------------------|------|
| | Acceptable Reference Data | ISO 17025 | * Full Approval Status | 'T' or 'A' Status | 'X' Status | | | |
| No | Yes/No | Yes/No | Yes/No | Yes/No | Yes/No | No | No | 1 |
| Yes | No | Yes | Yes | Yes | No | No | No | 2 |
| Yes | No | No | Yes | Yes | No | No | No | 2 |
| Yes | No | Yes | No | No | Yes | No | No | 2 |
| Yes | No | No | No | No | Yes | No | No | 2 |
| Yes | Yes | Yes | No | No | Yes | Yes | No | 3 |
| Yes | Yes | No | No | No | Yes | Yes | No | 3, 4 |
| Yes | Yes | No | Yes | Yes | No | Yes | Yes | 4 |
| Yes | Yes | No | Yes | No | No | No | No | |
| Yes | Yes | Yes | Yes | Yes | No | Yes | Yes | |

Notes 1-4 on page D.4 * per current development methodology in d.3

Note 1: Unregistered tests cannot subsequently be considered to have been run in accordance with the Code. (A completed registration is documented by ERC sending part C of the registration form to the sponsor and laboratory).

Note 2: Acceptable reference data, run in accordance with CEC Test Method Section 11 must be obtained before subsequent candidates can be considered to have been run in accordance with the Code.

Note 3: Once 'T' Status has been granted, any tests run to equivalent 'X'-Status version(s) of the CEC Test Method can be considered as eligible for inclusion in the ERC Summary (see para d.4). Equivalence will be defined by the CEC Working Group.

Note 4: Once a laboratory achieves ISO17025 accreditation, tests with a start date up to 18 months prior to the accreditation date can be considered as eligible for inclusion in the ERC Summary, provided they were acceptable references or subsequent candidates.

Where an accreditation body has a policy of not allowing accreditation of 'X' Status tests, classification of the data as run in accordance with the Code is allowed by ATC. In the case of a test that is subsequently granted 'T' Status, this allowance will not be extended beyond 12 months after the start date of the first test at the laboratory run to the 'T' Status method.

Section E REGISTRATION OF TESTS

e.1 Preamble

The ATC Code of Practice requires that all candidate lubricant engine tests requested by Test Sponsors, and all reference lubricant tests, shall be operated by a registered Test Laboratory and each test shall be registered with the European Registration Centre (ERC). The purpose of this registration is to provide unambiguous documentation and a simple tracking system for all registered engine tests. The system depends upon the obligatory use of a three-part Registration Form. Different forms are used for candidate and reference tests.

Lubricant engine testing carried out for research purposes need not be registered with ERC.

e.2 Documentation

Each Registration Form comprises three parts for completion by the Test Sponsor, the Test Laboratory and ERC respectively. Only the format in Appendix 1, [Form E.1](#) and [Form E.2](#) shall be used.

e.3 Admissible tests

Only those tests listed in Section D of this Code may be registered.

e.4 Registration Fee

A registration fee becomes chargeable upon receipt by ERC of Part A of the Registration Form.

e.5 Completion of Test Registration Forms

The forms shown in Appendix 1, [Form E.1](#) (for candidate lubricants) and [Form E.2](#) (for reference lubricants) require specific information to be provided by both the Test Sponsor and the Test Laboratory when registering tests. Entries shall follow various coding conventions, which are shown on pages [E.4-5 for candidate tests](#) and [E.6-7 for reference tests](#) together with explanations of the information required.

Part A:

To be completed by the Test Sponsor at the time of commissioning test work with a Test Laboratory. Copies shall be provided to both the ERC and to the selected Test Laboratory.

The Test Sponsor may choose any ERC registered Test Laboratory.

Part B:

To be completed by the Test Laboratory on the form received from the Test Sponsor with Part A already completed. Where a Test Laboratory uses more than one stand for the required test procedure, the next available vacant stand must be chosen for the planned candidate lubricant test.

Part B must show the planned date of commencement of testing.

When Parts A and B have been fully completed, copies of the Registration Form shall be provided to ERC and to the Test Sponsor by the Test Laboratory.

Test work may not commence until after the time of receipt of the form by ERC. Tests begun before this time shall not be used in support of candidate formulations.

Section E continued

Part C:

Shall be completed by ERC upon receipt of the Registration Form with Parts A and B completed. ERC shall note the time of receipt, to the nearest minute, and the applicable time zone.

Copies of the form showing completed entries in Parts A, B and C shall be returned to the Test Sponsor and to the Test Laboratory for information purposes. The copy of the completed Registration Form, which is held by ERC, shall be the official copy for the purposes of the Code of Practice, with any others serving only for information. The time of receipt shown by ERC in Part C will show the precise time of registration.

e.6 Cancellation of a test

If a test is cancelled after registration, but prior to starting the test, then a Cancellation Form shall be forwarded to ERC and to the Test Laboratory by the Test Sponsor. A copy of the Cancellation Form is shown in Appendix 1, [Form E.3](#).

e.7 Engine Test Start

A test is deemed to have started when the engine has been charged with the test oil (candidate or reference) - the test has not been started if the engine is being 'run-in' on 'run-in' oil.

e.8 Correction of Errors

The Correction of Error Form is generally used to correct typographical errors or transposition of numbers. It must be completed by the Test Sponsor or the Test Laboratory. If the error is in Part A of the Registration Form, the Test Sponsor must complete a Correction of Error Form and submit it with a new Registration Form to ERC and to the Test Laboratory.

If the error is in Part B of the Registration Form, the Test Laboratory must submit a Correction of Error Form and a corrected Registration Form to both the Test Sponsor and ERC.

A copy of the Correction of Error Form is shown in Appendix 1, [Form E.4](#).

e.9 Uncontrolled Circumstances

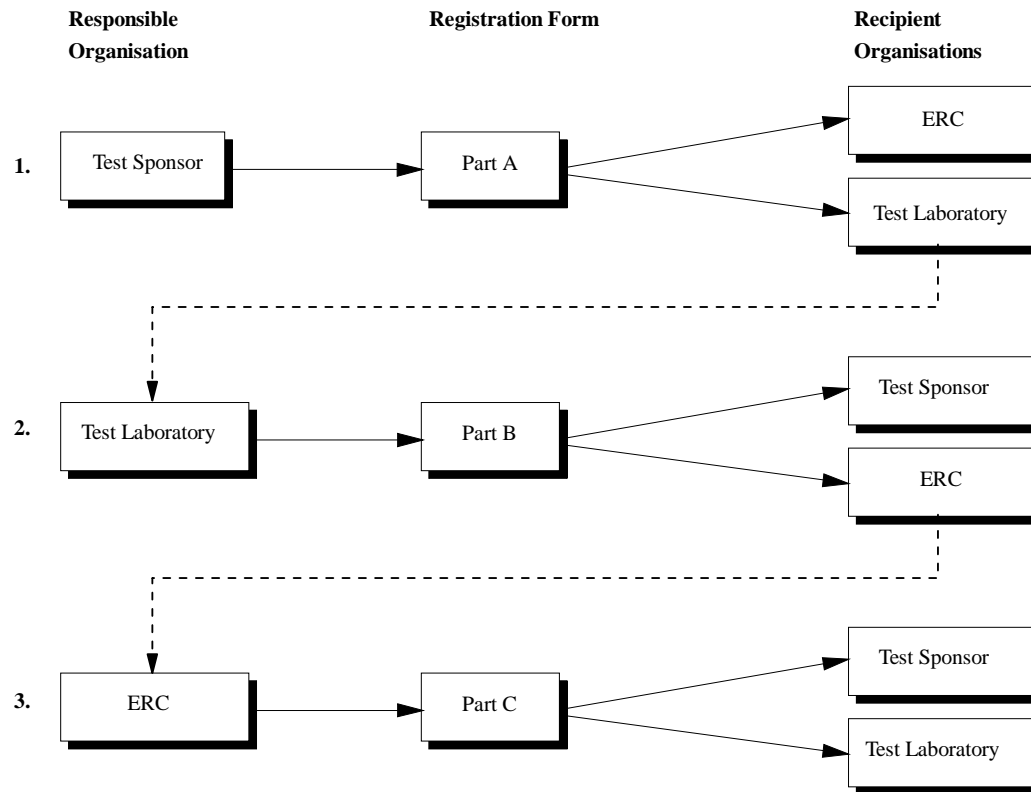
In the case that an attempt on the part of either the sponsor or test laboratory to register a test with the ERC (via either fax or website) is unsuccessful due to uncontrolled circumstances, then the sponsor or lab may register the test by providing all relevant information (either Part A or Part B) via email to:

registration@atc-erc.org

Uncontrolled circumstances may include situations such as a power, network, or phone outages. Once the uncontrolled circumstance has been resolved, the record and email will be treated as a valid registration provided all pertinent information has been properly supplied. The ERC will then provide documentation that registration has been received and that the time and date of the email has been honored for registration purposes.

Section E continued

SCHEDULE OF REGISTRATION ACTIVITIES



Section E: Coding Used For Registration Form E.1 for Candidate Tests

The following sequence of coding conventions shall be used:

| | Sponsor ID | Sponsor Code | Modification | Blend Number | Test | Count | Laboratory ID | Stand |
|---------|------------|--------------|--------------|--------------|---------|-------|---------------|-------|
| Example | AB | LUBE123456 | A | 02 | OM364LA | 03 | YZ | STAND |

Sponsor ID

A unique two-letter combination agreed with ERC for use in all registration applications. Where a ACC Sponsor ID already exists, then the same Sponsor ID shall be used. Where the Test Laboratory acts as the Test Sponsor, the Laboratory ID shall be used as Sponsor ID, wherever possible. The Test Sponsor inserts this Sponsor ID.

Sponsor Code

A candidate lubricant coding chosen by the Test Sponsor to a maximum length of ten characters and used to facilitate the tracking of formulations. The Test Sponsor inserts this Sponsor Code.

Modification

A single, upper case letter beginning with A for the initial candidate formulation and progressing through the alphabet as successive formulation modifications are made during the course of a development programme. See also Section H. The Test Sponsor inserts this letter.

Blend Number

A two-digit number where 01 is the first and 02 is the second candidate lubricant batch, etc. The Test Sponsor inserts this number.

Test

An ATC Designation of up to six characters used to define the type of engine test run, as shown below. The Test Sponsor inserts this Designation.

| Test Procedure | Test Description | ATC Designation |
|----------------|--|-----------------|
| CEC L-38-94 | TU3M Valve Train Scuffing, Wear | TU3MS |
| CEC L-42-T-99 | OM 364LA Bore Polishing/Piston Cleanliness | OM364LA |
| CEC L-46-T-93 | VWICTD Ring Sticking and Piston Cleanliness | VWICTD |
| CEC L-51-98 | OM 602A Wear | OM602A |
| CEC L-52-97 | OM441LA Bore Polishing/Piston Cleanliness and Turbocharger Performance | 441LA |
| CEC L-53-95 | M111 Black Sludge | M111SL |
| CEC L-54-96 | M111 Fuel Economy Improvement | M111FE |
| CEC L-56-T-98 | XUD11BTE Medium Temperature Dispersivity | XUD11B |
| CEC L-78-99 | VWDI Direct Injection Diesel Performance | VWTDI2 |
| CEC L-88-02 | TU572 Oil Viscosity Increase, High Temperature Deposits & Ring Sticking | TU572 |
| CEC L-93-04 | DV4E3 Oil Dispersion at Medium Temperature for Passenger Car DI Diesel Engines | DV4E3 |
| CEC L-099-08 | OM646LA Passenger Car Diesel Engine Wear Test | 646LA |
| CEC L-101-07 | OM501LA Bore Polishing & Piston Cleanliness Test | 501LA |

Section E: Coding Used For Registration Form E.1 for Candidate Tests

Count

A two-digit number code used to designate the number of times Part A of the Registration Form for the candidate, as identified by "Sponsor ID", "Sponsor Code" and "Modification", has been submitted to a Test Laboratory within a designated "Test Type". 01 = the first test submitted to any Test Laboratory for a given Sponsor ID and Sponsor Code, 02 = the second test submitted to any Test Laboratory for the same Sponsor ID and Sponsor Code, etc. The count number shall be reset with each formulation modification.

The Test Sponsor inserts this Count.

| | |
|----------------|---|
| Laboratory ID* | A unique two-letter combination, agreed with ERC, and used to identify the Test Laboratory at which the test is to be conducted. Where a ACC Laboratory ID already exists, then the same coding shall be used, wherever possible. The Test Sponsor inserts this Laboratory ID. |
| Stand | An alpha/numeric code of no more than five characters which uniquely defines the test stand. The Test Laboratory inserts this Stand code. |

* Where a Test Laboratory initiates tests, then the Laboratory ID shall be used as a Sponsor ID, where possible.

Section E: Coding Used for Registration Form E.2 for Reference Tests

The following sequence of coding conventions shall be used

| | Sponsor ID | CEC Reference Oil Code | Batch Number | Test | Reference Run Count | Laboratory ID | Stand |
|-----------------|------------|------------------------|--------------|---------------|---------------------|---------------|--------------|
| Example: | YZ | RL148 | 12 | OM602A | 03 | YZ | Stand |

Sponsor ID

A unique two-letter combination agreed with ERC for use in all registration applications. Where a ACC Sponsor ID already exists, then the same Sponsor ID shall be used. Where the Test Laboratory acts as the Test Sponsor, the Laboratory ID shall be used as Sponsor ID, wherever possible. The Test Sponsor inserts this Sponsor ID.

CEC Reference Oil Code

The Reference Oil Code of up to five characters assigned by CEC. The Test Sponsor inserts this code.

Batch Number

The Batch Number of the reference oil of up to two characters as assigned by CEC. The Test Sponsor inserts this number.

Test

An ATC Designation of up to six characters used to define the type of engine test run, as shown below. The Test Sponsor inserts this Designation.

| Test Procedure | Test Description | ATC Designation |
|---------------------|---|-----------------|
| CEC L-38-94 | TU3M Valve Train Scuffing, Wear | TU3MS |
| CEC L-42-T-99 | OM 364LA Bore Polishing/Piston Cleanliness | OM364LA |
| CEC L-46-T-93 | VWICTD Ring Sticking and Piston Cleanliness | VWICTD |
| CEC L-51-98 | OM 602A Wear | OM602A |
| CEC L-52-97 | OM441LA Bore Polishing/Piston Cleanliness and Turbocharger Performance | 441LA |
| CEC L-53-95 | M111 Black Sludge | M111SL |
| CEC L-54-96 | M111 Fuel Economy Improvement | M111FE |
| CEC L-56-T-98 | XUD11BTE Medium Temperature Dispersivity | XUD11B |
| CEC L-78-99 | VWDI Direct Injection Diesel Performance | VWTDI2 |
| CEC L-88-02 | TU572 Oil Viscosity Increase, High Temperature Deposits & Ring Sticking | TU572 |
| CEC L-93-04 | DV4E3 Oil Dispersion at Medium Temperature for Passenger Car DI Diesel Engines | DV4E3 |
| <i>CEC L-099-08</i> | OM646LA Passenger Car Diesel Engine Wear Test | 646LA |
| CEC L-101-07 | OM501LA Bore Polishing & Piston Cleanliness Test | 501LA |

Section E: Coding Used for Registration Form E.2 for Reference Tests

Reference Run Count

A two-digit number indicating the number of times a given reference oil/batch has been tested in the designated test and stand, where 01 = first test and 02 = second test, etc. The Test Laboratory inserts this count.

Laboratory ID

A unique two-letter combination, agreed with ERC, and used to identify the Test Laboratory at which the test is to be conducted. Where a ACC Laboratory ID already exists then the same coding shall be used, wherever possible. The Test Sponsor inserts this Laboratory ID.

Stand

An alpha/numeric code of no more than five characters which uniquely defines the test stand. The Test Sponsor inserts this Stand code.

Note: It is assumed that for reference tests the Test Laboratory will, in the majority of cases, be the Test Sponsor. Where this is not the case the Test Sponsor should liaise with the Test Laboratory for data needed to complete the formulation/stand code.

Section F ENGINE TEST REPORTS

- f.1 Upon completion of an engine test, the Test Laboratory shall complete the electronic data file in ATC-approved format according to the relevant data dictionary. Test Laboratories must submit the test results to ERC by Electronic Data Transfer (EDT).
- f.2 Procedures for transmitting data electronically are available from the ERC.
- f.3 A Test Validity Statement (Appendix 1, Form F.1) relating to the outcome of the test (see Fate of Tests, Glossary Section I) is required for any test that was started under the ATC Code of Practice. Since this statement is included in the data dictionaries, it is not necessary to send Form F.1 to the ERC, but it must be included in the Test Report sent to the Test Sponsor. If a test was cancelled prior to start, the ERC must receive a completed Cancellation Form. No Test Validity Statements are submitted for tests that do not start.
- f.4 The ERC does not need the test report from the Test Laboratory, but the Test Sponsor does. The reporting profiles in the Data Dictionaries contain all test result parameters which are to be stored in the ERC data base, selected parameters of which are to be reported in the ERC Summary for the Test Sponsor's Candidate Data Package.
- f.5 Data dictionaries contain the reporting profiles for each engine test within the Code, for candidate and reference oil tests. They have been developed through industry consensus and are maintained by the European Registration Centre to facilitate electronic transfer of engine test data via the data upload website and can be found on the ATC/ERC Website at [Data dictionaries for electronic transfer of CEC test results](#).
- f.6 In the past, reporting of both 'A' and 'B' sets of variables was mandatory for candidate, reference, and round robin tests. These variables are now included in the data dictionary.
- f.7 In the past, where performance targets were defined relative to reference oil performance, the relevant reference oil result, together with the reference formulation / stand code had to be included in the reporting profile. These results are now included in the data dictionary.
- f.8 In the past, Test Laboratories have found it necessary to change reported test results, either as a result of their own internal quality checks or as a result of discrepancies found by ERC during data validation. With the advent of EDT, this situation has become more complicated. Test Laboratories are referred to data upload manual for complete details.

PURPCODE '04' in the [Common Header](#) section of each data dictionary must be used when data is re-submitted after ERC finds errors during review of the test validity declaration or during data validation, prior to data flowing into the database.

Section F continued

As of 13 January 2006, Test Laboratories must use Form F.4 to change reference data when a discrepancy has been found between the reported results and the validity declaration of 'valid and within acceptance bands'. Refer to [ERC Posting #136](#).

Once data have passed ERC checks and are "closed" (that is, the 'Last Status' indicated for an uploaded file is 'complete', as shown on a Test Laboratory's upload page), changes to the data must follow the procedures indicated in [ERC Posting #99](#), with these caveats:

- The reason for the changes must be indicated on the appropriate Control Form (Appendix 1, [Form F.3](#) and [Form F.4](#)). This refers to the root cause of the error, not to way the error was detected. That is, an acceptable reason for change might be "rounding error in program". It would be unacceptable to give the reason as "ERC asked for changes".
- To ensure that the changes are known and approved by laboratory management, the Control Form must be signed by the person initiating the changes and co-signed by the Laboratory Manager or his equivalent.
- The forms must be submitted to the ERC.

f.9 End-of-test data must be sent to the ERC and to the Test Sponsor no later than 60 days after the engine test start date.

Late test reports will be handled according to [ERC Posting #9](#). If the requisite information is not received by ERC within the timing specified, ATC will disallow any new registrations by the Test Laboratory. Results supplied to ERC later than 60 days after start may be ineligible as candidate support; for reference tests, subsequent candidate registrations may be rejected.

Section G

ATC CANDIDATE DATA PACKAGE

All Test Sponsors have the responsibility to maintain a complete record of each ATC Data Set or Programme conducted under the ATC Code of Practice. The ATC Candidate Data Package is a part of the total documentation, which includes information of critical interest to the customer. The Candidate Data Package may contain any additional information that the Test Sponsor deems appropriate.

The information given below must be included.

- g.1 A summary, generated by ERC, of all engine tests which were registered as part of an ATC Data Set or ATC Programme: this shall include all tests registered under each Sponsor ID / Sponsor Code combination as defined in Section E (pages E.4-E.7). The summary shall include for each test the entire Formulation/Stand Code as illustrated in Section E, as well as the fate of each registered test. Refer to Section I, pages I.3 and I.4, 'Fate of Tests'.

For tests completed after 1st October 2000, only tests in the category - Valid, Completed (and in accordance) - may be used to support the final candidate formulations.

- g.2 Documentation defining the composition of the initial formulation (that used at the start of the ATC Data Set or Programme), and the final formulations: this shall provide the complete formulation recipe in mass percent, such that the total is 100%. Details will include: Performance Additive Package; Viscosity Modifier (VM), if any; pour point depressant, if any; and other additives in the formulation as well as all base stocks. Each additive and base stock designation may be identified by trade name, stock or code number or any other designation, which clearly identifies it to the customer. If a VM is used, an indication as to whether the product is dispersant or non-dispersant type shall be included. If a Performance Additive Package is not used, individual components must be listed.

Analysis of the specific base stock(s) used in the programme shall be provided to allow classification in accordance with the base stock categories as defined by the ATIEL Code of Practice, Appendix B.

- g.3 A summary of all formulation modifications used and guidelines invoked in developing the final candidate formulation.
- g.4 Physical and chemical characterisation of all candidate formulations which support a final candidate formulation, to include:
- Kinematic viscosity at 100°C
 - CCS
 - Finished oil metals where present
 - Finished oil S, N, Si, P
 - TBN
 - Sulphated Ash
 - Treatment levels of Performance Additive Package, base stocks, viscosity modifiers and any other constituents.
 - CI: only required on the final formulation and where an ACEA A/B or C claim is being made.

Section G continued

Within an ATC Data Set / Programme and any Programme Extension the same test methods must be used for measurement of candidate physical and chemical properties

g.5 Documents and Reports for Oil Codes/Tests in the ATC Programme

| Test Form needed → Fate of Test ↓ | For Each Registered Test | | | | Full Test Report |
|--|--------------------------|-------------------|-------------------------|-------------|------------------|
| | Test Registration Form | Cancellation Form | Test Validity Statement | ERC Summary | |
| Cancelled | √ | √ | N/A | √ | N/A |
| Operationally valid, completed and in accordance | √ | N/A | √ | √ (ii) | √ (iii) |
| Operationally valid, completed and not in accordance | √ | N/A | √ | √ (ii) | √ (iii) |
| Operationally valid and stopped by sponsor (i) | √ | N/A | √ | √ | N/A |
| Operationally valid and terminated (i) | √ | N/A | √ | √ | N/A |
| Operationally invalid and completed | √ | N/A | √ | √ | N/A |
| Operationally invalid and abortedd (i) | √ | N/A | √ | √ | N/A |

√ = Required N/A = Not applicable

- (i) Aborted = failed to complete for operational reasons and declared invalid by Test Laboratory.
Stopped = at test sponsor request.
Terminated = failed to complete for other reasons
- (ii) This will include a full summary of the 'A' variable test results.
- (iii) Only for engine tests supporting final candidate formulation.

Completed engine tests that do not support a final candidate formulation must be documented through inclusion of completed Test Validity Statements; it is expected that a full report will exist for all such tests that were operationally valid and completed.

In the event that a test is operationally invalid, full ratings may be an unnecessary expense. In such a case, a partial report is acceptable provided that the report contains sufficient information that a third party may clearly see the cause of the operational invalidity. The Test Validity Statement may serve as the partial report.

g.6 Data to support additional SAE viscosity grades included in the Programme as defined in the ATIEL Viscosity Grade Readacross Guidelines.* Applicable information in g.1 through g.5 above, and a statement from the Test Sponsor which relates each SAE viscosity grade within the ATC Programme, must also be provided. This also applies to Programme Extensions.

g.7 Data to support other base stocks as defined in the ATIEL Base Oil Interchange Guidelines.* Applicable information in g.1 through g.6 above, and a statement from the Test Sponsor which links the Programme Extension to the ATC Programme, must be provided.

(*) See ATIEL Code of Practice

Section H**FORMULATION MODIFICATIONS**

This section deals with formulation modifications, which may be required during the generation of an ATC Data Set or Programme, and to extend the use of an ATC Programme. The intention is to allow the use of Fundamental Formulation Knowledge within the following framework.

It is the intention that the initial candidate formulation will meet all customer engine and bench test requirements without modification. However, formulation modifications shall be permitted with the expectation that the modified formulation will also meet all the engine and bench test requirements. Such modifications, as covered in guidelines h.1 to h.5, should be of sufficient magnitude that they would be expected to result in discernible improvements in performance.

Formulation modifications made during the conduct of tests covered by the ACC Code of Practice shall be governed by the ACC Code.

Formulation modifications made during the conduct of tests covered by the ATC Code are based on the following set of guidelines:

- Base stock changes made during the course of an ATC Programme are governed by guideline h.7.1 for new base stock addition and by h.8.d for changes to existing base stock ratio. Additionally, a base stock matrix approach for an ATC Data Set generation is allowed by guideline h.7.2.

All formulation modifications must be declared to the customer.

MODIFICATIONS WITHIN AN ATC DATA SET OR PROGRAMME**PERFORMANCE ADDITIVE PACKAGE:**

h.1 No decrease in treatment level of either the entire Performance Additive Package or its individual components is allowed, except within the context of permissible rebalances.

h.2 Increase in the total treatment level of the Performance Additive Package and/or its individual components is allowed.

h.3 One new component addition (separate from permissible rebalances) is allowed, subject to its final level being no more than 10% by mass of the final Performance Additive Package.

h.4 Rebalance among zinc dithiophosphates is allowed whilst maintaining constant formulation phosphorus level. This may include introduction of a new zinc dithiophosphate: only one new zinc dithiophosphate introduction is allowed.

h.5 Rebalance among metallic detergents is allowed whilst not decreasing formulation soap level. This may include introduction of a new metallic detergent; only one new metallic detergent introduction is allowed.

h.6 Any final candidate Performance Additive Package offered to the customer must incorporate all of the formulation modifications used to substantiate the performance claims.

Section H continued

BASESTOCKS:

h.7.1 New Basestock Addition

Substitution of a base stock by another base stock within the same base stock slate⁵ is allowed according to the following table:

| Base stock in original formulation | Interchange Base Stock ^{1, 2, 3, 4} | | | | | |
|------------------------------------|--|----------|-----------|----------|---------|----------|
| | Group I | Group II | Group III | Group IV | Group V | Group VI |
| Group I | ≤ 100% | | | | | |
| Group II | | ≤ 100% | | | | |
| Group III | | | ≤ 100% | | | |
| Group IV | | | | ≤ 100% | | |
| Group V | | | | | | |
| Group VI | | | | | | ≤ 100% |

Notes:

1. All percentages are %m of the finished oil.
2. Interchange base stock must be within the same slate as that present in original formulation. (Thus table cannot apply to shaded boxes above.)
3. Guidelines applying to Gp VI stocks apply only to ACEA A, B, A/B & C categories.
4. Base stock groupings are as defined by the ATIEL Code of Practice, section B.
5. A base stock slate is a product line of base stocks as defined in the ATIEL Code or Practice (Section 2 Definitions, Appendix B, page B.5).

Substitution of a base stock by another base stock from a differing base stock slate⁷ is allowed according to the following table:

| Base stock in original formulation | Interchange Base Stock ^{1, 5, 6} | | | | | |
|------------------------------------|---|----------|---------------------------|--------------------------|------------------|--------------------------|
| | Group I | Group II | Group III | Group IV | Group V | Group VI |
| Group I | ≤10% | ≤10% | ≤30% >30% ² | ≤30 >30% ² | ≤10 ² | ≤30 >30% ² |
| Group II | ≤10% | ≤10% | ≤30% >30% ² | ≤30 >30% ² | ≤10 ² | ≤30 >30% ² |
| Group III | None | None | ≤10% | ≤30 | ≤10 ² | ≤30 |
| Group IV | None | None | None | Note 3 | ≤10 ² | Note 4 |
| Group V | None | None | None | None | None | None |
| Group VI | None | None | None | Note 4 | ≤10 ² | Note 3 |

Notes:

1. All percentages are %m of the finished oil
2. Allowed with specific engine test data (or other engine test data as in h.15.)
3. Substitution of Gp IV by another manufacturer's Gp IV, or substitution of a Gp VI by another manufacturer's Gp VI is allowed as defined by the ATIEL Code of Practice (Appendix B, base Stock Interchange Guidelines)
4. Substitution of Gp IV by Gp VI, or Gp VI by Gp IV is allowed as defined by the ATIEL Code of Practice (Appendix B, base Stock Interchange Guidelines)
5. Guidelines applying to Gp VI stocks apply only to ACEA A, B, A/B & C categories
6. Base stock groupings are as defined by the ATIEL Code of Practice, section B
7. A base stock slate is a product line of base stocks as defined in the ATIEL Code or Practice (Section 2 Definitions, Appendix B, page B.5).

Section H continued

h.7.1 New Basestock Addition (continued)

Cumulative substitutions must not exceed 10%, or 30% by mass, as relevant and as defined above, from any initial/intermediate candidate for which test data are to be retained in support of the final candidate without specific engine test data (or other engine test data as in h.15). With specific engine test data (or other engine test data as in h.15), replacement of Gp I or II with Gp III, IV or VI is unlimited.

Where changes such as above are introduced as a result of failing engine test data, and to pass an engine test, the reverse substitution may not be made subsequently, even if apparently allowed under the rules above, without the relevant engine test having been re-run and passed on a system representative of the final base stock mix to be promoted.

h.7.2 Base Stock Matrix Approach

As an alternative to the use of a single base stock slate for the generation of data to support an ATC Programme, a matrix approach may be used. This uses the ATIEL Code base oil interchange principles in that a test (or tests) which are not deemed sensitive to base stock changes may be run in any applicable base stock.

For example, for ACEA A5/B5-04, a matrix might comprise:

| Test Type | Group I Base Stock Slate | | |
|-----------|--------------------------|-----|-----|
| | A | B | C |
| TU5 | X | O | O |
| Seq VG | X | O | R/A |
| TU3M | R/A | X | R/A |
| M111S | R/A | R/A | X |
| M111FE | X | O | O |
| DV4 | R/A | R/A | X |
| VW TDI | X | O | O |
| OM 602A | R/A | X | R/A |

*Where X = Test Completed
R/A = Read-across Allowed
O = Test Required*

In this example, base stock A is already fully qualified to A5/B5-04. To qualify base stock B the tests required under column B must be run (TU5, Sequence VG, M111FE, VWTDI). Likewise, if qualification is required in base stock C, the following tests must be run (TU5, M111FE, VWTDI). In this example Sequence VG test is required in base stock B and not in base stock C as base stock C meets the API base stock interchange requirements from base stock A whereas base stock B does not.

Section H continued

OTHER CONSTITUENTS:

h.8 In addition to those modifications to the candidate formulation as outlined above, certain other changes may be made to allow adjustment of the physical/chemical properties of the candidate without adversely affecting engine performance. Only the following changes are allowed.

- a) Viscosity modifier treatment level within a given candidate SAE viscosity grade may be changed in accordance with the following principles:

Change in viscosity modifier level up to 15% relative is allowed without further support (change of viscosity modifier is not permitted within an ATC data set or programme).

Change in viscosity modifier level above 15% relative is allowed if such change is in alignment with the principles of the ATIEL Viscosity Grade Readacross Guidelines, specifically as follows:

On a test by test basis, if the required SAE viscosity grade (e.g. 5W-30) can be read across to the next higher summer grade (e.g. 5W-40) then the viscosity modifier content of the final candidate oil may be higher than that of the tested oil by >15% relative (in this example both the test oil and the final candidate oil are 5W-30 grade).

Likewise if read across is allowed to the next lower summer grade (e.g. 5W-20), then the viscosity modifier content of the final candidate oil may be lower than that of the tested oil by >15% relative.

Where the ATIEL Viscosity Grade Readacross Guidelines are used, as above, to justify changes in viscosity modifier level of >15% relative and these guidelines indicate a need for Level 2 support (as defined in ATIEL Code of Practice, Appendix G), then such technical support must be included in the ATC candidate data package.

Where the ATIEL guidelines do not support read across to the relevant adjacent summer grade then the change in viscosity modifier content is restricted to a maximum of 15% relative.

- b) Pour point depressant type and/or level.
- c) Foam inhibitor type and/or level.
- d) Base oil ratio of existing base oil mix within a candidate SAE viscosity grade, as follows:

For a basestock mix from a single slate, basestock ratio rebalance is unrestricted.

For a basestock mix of more than one basestock slate, any rebalance must follow the principles given in h.7 above (which also covers any new basestock addition), but with no change in Gp V level permitted.

Section H continued

For example, a basestock mix of 65 mass% A (Gp I) and 15% mass B (Gp II) can be rebalanced to

- a) 55 mass% A (Gp I), 25 mass% B (Gp II)
- b) 75 mass% A (Gp I), 5 mass% B (Gp II)
- c) 55 mass% A (Gp I), 10 mass% C (Gp I), 15mass% B (Gp II)
- d) 65 mass% A (Gp I), 5 mass% B (GP II), 10 mass% D (Gp II) etc.....
where A, B, C, D represent different basestock slates.

h.9 The final candidate formulation supported in the ATC Data Set is that which incorporates all of the changes outlined in guidelines h.1-h.8 from formulation variants for which test data are retained.

PROGRAMME EXTENSIONS:

h.10 Programme Extension is the process by which modification is made to the final formulation of an ATC Programme to meet additional requirements.

Examples of such requirements can include, but are not restricted to:

- * Base Oil Interchange (BOI)
- * (Additional) SAE Viscosity Grades
- * Viscosity Modifier Interchange
- * Additional engine test performance
- * TBN boost

h.11 Modifications outlined in guidelines h.1-h.5 and h.8 are also permitted within Programme Extensions without further support. In addition, components which were not present in the original tested formulation may be used as boosters to the system. The amount of the resultant addition is not restricted but demonstration that the performance has not been harmed must be available according to h.15.

New basestock addition according to guideline h.7 may be invoked in Programme Extension, subject to the cumulative limitations cited therein which must apply across the original and extended set of supporting formulations.

h.12 SAE Viscosity Grade Read Across and Base Oil Interchange are particular examples of Programme Extension, guidelines for which are as contained in the ATIEL Code of Practice.

Section H continued

h.13 Viscosity Modifier Interchange (VMI) is a specific example of Programme Extension, guidelines for which are as follows:

h.13.1 Any VMI must be supported by engine test data and rheological testing before implementation is permissible; the engine test support data may comprise specific testing (see h.13.3, h.13.6).

h.13.2 A lubricant formulation (VM/Performance Additive Package/Base Oil) must be fully supported by an ATC Programme for VMI to take place.

h.13.3 Specific VMI testing, where carried out, must commence on the same Performance Additive Package at the same treat rate, and should be carried out in the same base stocks as used for the original programme. Minor rebalancing of the base stocks is permissible to achieve viscometric targets. Selection of viscosity grade(s) for VMI test work should be made based upon the coverage required for the interchange Viscosity Modifier and with regard to the relevant Viscosity Grade Readacross Guidelines.

h.13.4 VMI may be permissible between products from the same or from different suppliers.

- For products from the same supplier, the supplier is responsible for defining those products that are equivalent and interchangeable without testing, and those for which testing is required before interchange is permissible. If the VM polymer content increase is greater than 15%, then VMI testing must be carried out.
- For products from different suppliers, specific VMI testing will always be required.

h.13.5 A VMI programme can be used to support other VM's from the same supplier, which are declared by the supplier to be equivalent and interchangeable. No additional interchange testing is required.

h.13.6 Engine tests required by the proposed performance claim(s) which include oxidation and/or engine deposit assessment must in general be run for VMI. Specifically, for CEC tests covered by this Code, and included for example in ACEA European Oil Sequences, the following tests (Table H.1) must be run before implementation of interchange is permissible.

Different test requirements have been identified for interchanging non-dispersant viscosity modifiers (NDVM) and/or dispersant viscosity modifiers (DVM), as shown in Table H.1.

Section H continued

Note: Obsolete categories (A1, A2, A3, A5, B1, B2, B3, B4, and B5) have been removed from Table H.1 below.

TABLE H.1: VM Interchange

| Performance Category | NDVM to NDVM ⁽²⁾ | DVM to DVM or NDVM to DVM ^{(1) (2)} | DVM to NDVM ^{(1) (2)} |
|----------------------|---|--|--------------------------------|
| A1/B1 | TU572, M111SL or Seq. VG, M111FE, VWICTD or VWTDI2 | TU572, M111SL or Seq. VG, M111FE, XUD11B ⁽⁸⁾ or DV4E3 ⁽⁷⁾ , OM602A <i>or 646LA</i> , VWICTD or VWTDI2 | All engine tests |
| A3/B3 | TU572, M111SL or Seq. VG, VWICTD or VWTDI2 | TU572, M111SL or Seq. VG, XUD11B ⁽⁸⁾ or DV4E3 ⁽⁷⁾ , OM602A <i>or 646LA</i> , VWICTD or VWTDI2 | All engine tests |
| A3/B4 | TU572, M111SL or Seq. VG, VWTDI2 | TU572, M111SL or Seq. VG, XUD11B ⁽⁸⁾ or DV4E3 ⁽⁷⁾ , OM602A <i>or 646LA</i> , VWTDI2 | All engine tests |
| A5/B5 | TU572, M111SL or Seq. VG, VWTDI2, M111FE | TU572, M111SL or Seq. VG, XUD11B ⁽⁸⁾ or DV4E3 ⁽⁷⁾ , OM602A <i>or 646LA</i> , VWTDI2, M111FE | All engine tests |
| C1 | TU572, M111SL or Seq. VG, VWTDI2, M111FE | TU572, M111SL or Seq. VG, XUD11B ⁽⁸⁾ or DV4E3 ⁽⁷⁾ , OM602A <i>or 646LA</i> , VWTDI2, M111FE | All engine tests |
| C2 | TU572, M111SL or Seq. VG, VWTDI2, M111FE | TU572, M111SL or Seq. VG, XUD11B ⁽⁸⁾ or DV4E3 ⁽⁷⁾ , OM602A <i>or 646LA</i> , VWTDI2, M111FE | All engine tests |
| C3 | TU572, M111SL or Seq. VG, VWTDI2, M111FE ⁽⁵⁾ | TU572, M111SL or Seq. VG, XUD11B ⁽⁸⁾ or DV4E3 ⁽⁷⁾ , OM602A <i>or 646LA</i> , VWTDI2, M111FE ⁽⁵⁾ | All engine tests |
| C4 | TU572, M111SL or Seq. VG, VWTDI2, M111FE ⁽⁵⁾ | TU572, M111SL or Seq. VG, XUD11B ⁽⁸⁾ or DV4E3 ⁽⁹⁾ , OM602A <i>or 646LA</i> , VWTDI2, M111FE ⁽⁵⁾ | All engine tests |
| E2 | OM364LA ⁽⁶⁾ | OM364LA ⁽⁶⁾ , OM602A <i>or 646LA</i> | All engine tests |
| E4 | OM441LA <i>or 501LA</i> , T-8E ⁽³⁾ or T-11 | OM441LA <i>or 501LA</i> , T-8E or T-11, OM602A <i>or 646LA</i> | All engine tests |
| E6 | OM441LA <i>or 501LA</i> , T-8E ⁽³⁾ or T-11 | OM441LA <i>or 501LA</i> , T-8E or T-11, OM602A <i>or 646LA</i> | All engine tests |
| E7 | OM441LA <i>or 501LA</i> , T-8E ⁽³⁾ or T-11, ISM or M11HST or M11EGR ⁽⁴⁾ | OM441LA <i>or 501LA</i> , T-8E or T-11, ISM or M11HST or M11EGR ⁽⁴⁾ | All engine tests |

- (1) Physical mixes of DVM and NDVM are treated as DVM.
- (2) Where alternative tests, e.g., "M111SL or Seq. VG", the alternative test cannot be run to document readacross if a failing result has already been obtained on the other test.
- (3) The T8E requirement is waived if the replacement NDVM is of the same chemical type as the tested NDVM ("chemical type" means chemical family such as but not limited to, styrene ester, polymethacrylate, styrene butadiene, styrene isoprene, polyisoprene, olefin copolymer and polyisobutylene).
- (4) M11HST or M11 EGR *or ISM* not required if the HTHS of the VMI formulation is equal to or greater than that of the original formulation.
- (5) For xW-30 grades only.
- (6) The OM364LA requirement may be met by a passing OM441LA *at E7 level*.
- (7) Only CEC approved parameters apply.
- (8) The XUD11B must have been completed by the end of 2005 and for C1, C2, or C3 can only be used to support and ACEA 2004 claim

Section H continued

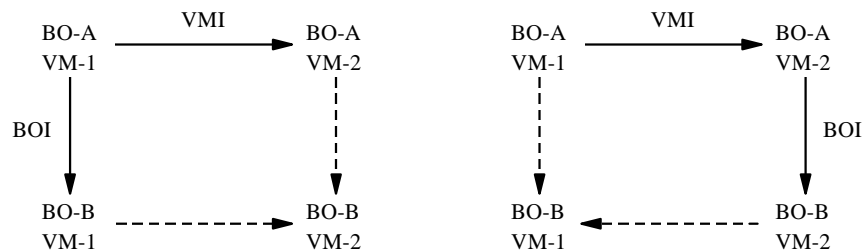
h.13.7 A VMI programme is Performance Additive Package specific, but can extend to Performance Additive Package systems of related technology within the formulation modification guidelines of the ATC Code.

h.13.8 BOI test work must be separate from VMI testing.

One BOI programme run on either the original VM/Performance Additive Package or the interchange VM/Performance Additive Package system will cover both systems.

Similarly, one VMI programme, run on either the original Base Oil/Performance Additive Package or the interchange Base Oil/Performance Additive Package System, will cover both systems.

e.g.



h.14 All formulation modifications used and the guidelines invoked to reach the final candidate formulation supported by the ATC Data Set must be declared to the customer in the Candidate Data Package.

h.15 A demonstration that the oil performance has not been harmed on addition of a booster must be available. Support must be detailed for each performance criteria (e.g. valve train wear, cylinder wear etc.) relevant to the category claimed.

Acceptable support includes:

- CEC, OEM, or ASTM engine tests*
- Proprietary engine tests*
- Computer modelling*
- Bench/laboratory tests*
- Vehicle field tests*

Section H continued

h.16 The following information must be presented on all formulation variants which support the final candidate lubricant formulation:

- * Kinematic viscosity at 100°C
- * CCS
- * Finished oil metals where present
- * Finished oil S, N, Si, P
- * TBN
- * Sulphated Ash
- * Treatment levels of Performance Additive Package, base stocks, viscosity modifiers and any other constituents.

Within an ATC Data Set/Programme and any Programme Extension the same test methods must be used for measurement of candidate physical and chemical properties.

Aborted Test - See **Fate of Tests**.

ATC Candidate Data Package

The full record of an ATC Data Set or Programme, with contents as described in Section G.

A Candidate Data Package must be prepared by the Test Sponsor to support any performance claim or test requirements involving tests covered by the ATC Code, and must be made available to a customer on request.

ATC Data Set

A collection of test data which may be used to demonstrate engine test performance to meet customer requirements and which has been based upon testing covered by the ATC Code of Practice.

Data must include information on any formulation modifications utilised as allowed under the ATC and/or ACC Codes of Practice.

The results may derive from a single engine test, selected tests or a full set of tests using engine tests covered by the ATC Code.

ATC Final (Candidate) Formulation

The formulation which meets the requirements and/or performance claims in an ATC Data Set or Programme involving testing covered by the ATC Code.

ATC Initial/Intermediate Formulation

The formulation(s) used at the start and in course of development of an ATC Data Set or Programme involving testing covered by the ATC Code. Section H covers permissible formulation modifications.

ATC Programme

An ATC Data Set which fully documents the performance in engine tests covered by the ATC Code of a final formulation against one or more performance categories for engine lubricants.

Data provided must include information on any permitted SAE viscosity grade read across which has been invoked.

Candidate Data Package - See **ATC Candidate Data Package**.

Candidate (Lubricant) Formulation - See **ATC Initial/Intermediate/Final Formulation** as above.

Customer

An organization or individual for whom an ATC Data Set or ATC Programme is conducted.

Section I continued

Component

A material which imparts a property to a candidate formulation, has a unique identifier and meets a particular manufacturer's specification. A Performance Additive Package is composed of specific components.

Data Dictionary - A file that contains the bookkeeping information necessary to manage data and contains the names, field types, length, and other characteristics of the fields in the database tables.

Data Set - See **ATC Data Set**.

Discontinued/Aborted Test

Any registered engine test which is started but does not complete the required test hours; reasons for the failure to finish the test are recorded in the Test Validity Statement.

For more detailed descriptions, see: Fate of Tests

Documentation

The following standard documents are specified for use by all participants within this Code:

| | |
|--|--------------------------------------|
| Test Sponsor Letter of Intent | Appendix 1, Form B.1 |
| Test Sponsor Self Evaluation Check List of Compliance | Appendix 1, Form B.2 |
| Test Laboratory Letter of Intent | Appendix 1, Form C.1 |
| Engine Test Registration Form for Candidate Tests | Appendix 1, Form E.1 |
| Engine Test Registration Form for Reference Tests | Appendix 1, Form E.2 |
| Engine Test Cancellation Form | Appendix 1, Form E.3 |
| Correction of Error Form | Appendix 1, Form E.4 |
| Test Validity Statement | Appendix 1, Form F.1 |
| Control Form for Changes to CANDIDATE Test Data | Appendix 1, Form F.3 |
| Control Form for Changes to REFERENCE Test Data | Appendix 1, Form F.4 |

Electronic Data Transfer – the movement of data files from one location to another using a secure socket-layer server. In this case, files are prepared by the Test Laboratory according to the data dictionary and are transmitted to ERC via Data-Interchange™.

Engine Test Stand

The specific location within a test facility of the test equipment together with, but not necessarily limited to: a dynamometer, the test engine and all associated instrumentation and control apparatus which are appropriate to the proper conduct of the specified engine test procedure.

Section I continued

Engine Test Start

A test is deemed to have started when the engine has been charged with the test oil (which can be either a candidate or reference oil.) The test has not started if the engine is being 'run-in' on a specific 'run-in' oil.

For the M111FE, where a baseline reference oil is run prior to the candidate, the test start is considered to be when the candidate oil is charged to the engine.

ERC Summary

A summary, generated by ERC at the request of the Test Sponsor, of all engine tests which were registered on a Sponsor Code as part of an ATC Data Set or ATC Programme. It will include: all engine tests registered for each Sponsor Code/Modification; the entire Formulation/Stand Code (see Section E, p.E.4); the fate of each test; and, for each Operationally Valid and Completed Test, a summary of the 'A' variable test results (see Section F).

Fate of Tests – The outcome of a candidate or reference test.

| FATE OF TESTS | STATUS |
|---|---|
| <p>Operationally Valid, Completed (and in accordance) (Previously: Operationally Valid and Completed; or Completed, Valid)</p> | <ul style="list-style-type: none"> • The test ran for full duration. • All required data were submitted to ERC in the proper format. • The Test Laboratory concluded that the test was operationally valid. • The Test Laboratory concluded that the test was run in accordance with the ATC Code. • The Test Stand and the Test Method met the requirements of the Code (i.e. Accreditation, Reference and CEC Status (see Section D, Table 1)). |
| <p>Operationally Valid, Completed (and not in accordance)</p> | <ul style="list-style-type: none"> • The test ran for full duration. • All required data were submitted to ERC in the proper format. • The Test Laboratory concluded that the test was operationally valid. • The Test Laboratory concluded that the test was not run in accordance with the ATC Code; or • The Test Stand and the Test Method does not yet meet the requirements of the Code (i.e. Accreditation, Reference and CEC Status (see Section D, Table 1)). |
| <p>Operationally Valid and Stopped by Sponsor</p> | <ul style="list-style-type: none"> • The Test Sponsor requested the test be stopped early. • The Test Laboratory concluded that the test had been operationally valid prior to cessation. • Test Validity Statement (as a minimum) has been submitted to ERC. |
| <p>Operationally Valid, Terminated</p> | <ul style="list-style-type: none"> • The Test Laboratory stated that the test was terminated. • The Test Laboratory concluded that the test had been operationally valid prior to cessation. • The reason(s) for test cessation do(es) not fall within 'Valid and Stopped' or 'Invalid and Aborted' categories. • Test Validity Statement (as a minimum) has been submitted to ERC with a comment showing reason for the test termination. |

Section I continued

Fate of Test (continued)

| | |
|--|--|
| <p>Operationally Invalid and Completed: (previously: Completed, Invalid)</p> | <ul style="list-style-type: none"> The test ran for full duration. The Test Laboratory concluded that the test was operationally invalid, and the Test Validity Statement (as a minimum) has been submitted to ERC. |
| <p>Operationally Invalid and Aborted</p> | <ul style="list-style-type: none"> The Test Laboratory stated that the test was discontinued or aborted. The Test Laboratory concluded that the test was operationally invalid. Test Validity Statement (as a minimum) has been submitted to ERC with a comment showing reason for the test abort. |
| <p>Cancelled</p> | <ul style="list-style-type: none"> ERC have received a Test Cancellation Form from either the Test Sponsor or Test Laboratory prior to the test start. |
| <p>Pending</p> | <ul style="list-style-type: none"> The Part A Registration has been submitted but the Part B Registration has not been submitted, or The test has been fully registered but the Test Validity Statement and Engine Test Results Form have not been received, or The test has been fully registered but there are format errors on the Test Validity Statement or with 'A' Variables data. |
| <p>Completed, Unresolved</p> | <ul style="list-style-type: none"> Where a completed test/result does not comply with the above categories it will be assessed 'Completed, Unresolved'. |
| <p>REFERENCE TESTS Operationally Valid, Completed (and in accordance and within acceptance bands)</p> | <ul style="list-style-type: none"> The test ran for full duration All required data were submitted to ERC in the proper format. The Test Laboratory concluded that the test was operationally valid. The Test Laboratory concluded that the test was run in accordance with the ATC Code. The Test Stand and the Test Method met the requirements of the Code (i.e. Accreditation, Reference and CEC Status (see Section D, Table 1). The test results were within the acceptance bands in place at the start of the test for all parameters. |
| <p>REFERENCE TESTS Operationally Valid, Completed (and in accordance and NOT inside acceptance bands)</p> | <ul style="list-style-type: none"> The test ran for full duration All required data were submitted to ERC in the proper format. The Test Laboratory concluded that the test was operationally valid. The Test Laboratory concluded that the test was run in accordance with the ATC Code. The Test Stand and the Test Method met the requirements of the Code (i.e. Accreditation, Reference and CEC Status (see Section D, Table 1). One or more test results were outside the acceptance bands in place at the start of the test for all parameters. |
| <p>Discontinued/Aborted (Superseded in September 1997 by Valid and Stopped; or, Invalid and Aborted; or Valid and Terminated)</p> | <ul style="list-style-type: none"> The Test Laboratory stated the test was discontinued or aborted. |

Section I continued

Final (Candidate) Formulation - See **ATC Final (Candidate) Formulation**.

Formulation Modification(s)

Permissible adjustment(s) to a formulation. See Section H.

Fundamental Formulation Knowledge

Fundamental Formulation Knowledge is founded upon an understanding of proprietary formulation technologies and the inter-relationship of basestock and additive performance in bench engine tests and in the field.

Fundamental Formulation Knowledge is built up through extensive and continuing experience in the development of automotive lubricants, and results in a comprehensive understanding of the effect of formulation modifications within specific lubricant additive technologies.

Identity Codes - See **Sponsor ID** and **Laboratory ID**.

Initial/Intermediate (Candidate) Formulation - See **ATC Initial/Intermediate (Candidate) Formulation**.

Relative (Percentage) Change

The fractional change made to a lubricant constituent, expressed in percentage terms.

Soap Level

The organic chemical part of the detergent.

Sponsor Code

A candidate lubricant coding chosen by the test sponsor and used to facilitate the tracking of formulations.

Invalid/Invalidity - See **Test Validity**

Laboratory ID

A unique two-letter combination, agreed with ERC, and used to identify the Test Laboratory at which the test is to be conducted. Where a ACC Laboratory ID already exists then the same coding shall be used, wherever possible.

Letter of Intent

A standard format letter which must be signed by a senior officer of any organisation wishing to demonstrate compliance with this Code of Practice. *See Section B, Section C, and Appendix 1, Form B.1.*

Performance Additive Package

A combination of, for example, detergents, dispersants, inhibitors and other components which when blended into base oils is intended to meet specific engine and bench test requirements.

Programme - See **ATC Programme**.

Section I continued

Programme Extension

Programme Extension is the process by which modification is made to the final formulation of an ATC Programme to meet any additional requirements.

Examples of such requirements can include but are not restricted to:

- Base Oil Interchange
- (Additional) SAE Viscosity Grades
- Viscosity Modifier Interchange
- Additional engine test performance.
- TBN Boost

See Section H.

Reference Lubricant

Reference lubricants are those which should have known field performance against which the engine test can be compared to establish correlation.

Sponsor ID

A unique two-letter combination agreed with ERC for use in all registration applications. Where a ACC Sponsor ID already exists, then the same Sponsor ID shall be used, wherever possible.

Stand - See **Engine Test Stand**.

Test Sponsor

That individual, company, or organisation having financial and administrative responsibility for conducting a programme.

Test Validity, or Invalidity

The terms 'Valid/Validity' and 'Invalid/Invalidity' related to engine tests with this Code refer to a Test Laboratory's assessment of the operational status of the test, unless otherwise specified.

Valid/Validity

See Test Validity.

Section J

ACRONYMS

| | |
|--------|--|
| ACC | American Chemistry Council |
| ACEA | Association des Constructeurs Européens d'Automobiles |
| API | American Petroleum Institute |
| ATC | Technical Committee of Petroleum Additive Manufacturers in Europe. A sector group of CEFIC |
| ATIEL | Association Technique de l'Industrie Européene des Lubrifiants |
| BOI | Base Oil Interchange |
| CEC | Coordinating European Council for the Development of Performance Tests for Transportation Fuels, Lubricants and Other Fluids |
| CEFIC | European Chemical Industry Council |
| DVM | Dispersant Viscosity Modifier |
| EAL | European Cooperation for Accreditation of Laboratories |
| EDT | Electronic Data Transfer |
| EELQMS | European Engine Lubricant Quality Management System |
| ERC | European Registration Centre |
| HTHS | High Temperature High Shear |
| ISO | International Standards Organisation |
| MLA | Multilateral Agreement |
| NDVM | Non Dispersant Viscosity Modifier |
| SAE | Society of Automobile Engineers |
| TBN | Total Base Number |
| VM | Viscosity Modifier |
| VMI | Viscosity Modifier Interchange - See Section H |

Appendix 1: Forms

Form B.1: *Letter of Intent*

Form B.2: Test Sponsor Self-Evaluation Checklist of Compliance

Form E.1: Test Registration Form—Candidate Lubricants

Form E.2: Test Registration Form—Reference Lubricants

Form E.3: Cancellation Form for Candidate and Reference Tests

Form E.4: Correction of Error Form

Form F.1: Test Validity Statement

Form F.3: Control Form for Changes to CANDIDATE Test Data

Form F.4: Control Form for Changes to REFERENCE Test Data

LETTER OF INTENT

(Company Name)

is committed to the continuous improvement of engine lubricant testing and approval procedures as defined in the ATC Code of Practice.

Accordingly, with effect from _____, this company intends to conduct all
(Date)
relevant lubricant engine tests and programmes in accordance with the practices specified in the ATC Code of Practice.

(Typed Name)

(Title)

(Signature)

(Date)

Form B.2 Test Sponsor Self-Evaluation Checklist of Compliance

TEST SPONSOR SELF-EVALUATION CHECKLIST OF COMPLIANCE

This Check List should be used in conjunction with pages B.4, B.5, which provides the key to each item.

| COMPLIANCE STAGE * | | I | II | III | IV | N/A |
|--|--|---|----|-----|----|-----|
| 1.1 1.2 1.3 1.4 1.5 1.6 | Test Registration | | | | | |
| 2.1 2.2 2.3 | Test Validity | | | | | |
| 3.1 3.2 | Use and Treatment of Data ERC Summary/CDP consistency Appropriateness of Supporting Data | | | | | |
| 4.1 | Validity or Interpretation Questions | | | | | |
| 5.1 5.2 5.3 | Formulation Modifications | | | | | |
| 6.1 6.2 6.3 6.4 | Programme Extensions | | | | | |

COMPLIANCE STAGES *

- I No compliance with the Code.
- II Item affected by issues having real importance to, or substantial consequences for, implementing the Code.
- III Item affected by issues having no real importance to, or no substantial consequences for, implementing the Code.
- IV Full compliance with the Code.
- N/A Not applicable.

Auditor

Executive Officer or Delegated Authority Typed Name/Title

Test Sponsor Company Name

Date

Signature

Date

**ATC CODE OF PRACTICE
ENGINE TEST REGISTRATION FORM
FOR
REFERENCE TESTS**

| | |
|--|--------------------------|
| Part A - To be completed by the Test Sponsor and submitted to the Test Laboratory and to ERC. | |
| Test Sponsor: | Contact: |
| Address: | |
| Phone Number: | Fax Number: |
| Date: | Test Type: |
| Test Laboratory: | |
| Formulation Code: | - - - - - - - - - - |
| | Internal Code (optional) |
| Part B - To be completed by the Test Laboratory and submitted to the Test Sponsor and to ERC. | |
| Lab Contact: | |
| Address: | |
| Phone Number: | Fax Number: |
| Test Number: | Estimated Start Date: |
| Round Robin (check one): No _____ Yes _____ | |
| Round Robin Information | |
| Formulation/Stand Code: | - - - - - - - - - - |
| Prepared by: _____ (Signature) | _____ (Date) |
| Part C - To be completed by ERC and returned to the Test Sponsor and to the Test Laboratory. | |
| Part A - Date Received: | Time Received/Zone: |
| Part B - Date Received: | Time Received/Zone: |
| Prepared by: _____ (Signature) | |

Form F.1

Test Validity Statement

**ATC CODE OF PRACTICE
TEST VALIDITY STATEMENT**

Test Laboratory: _____

Test Sponsor: _____

Formulation/Stand Code: _____

Test Number: _____

Test Start Date and Time: _____
(Specify Time Zone/Country)

DECLARATIONS

1. Does the test laboratory have a current Letter of Intent on file with ERC?
Yes _____ No _____ *
 2. Was the test properly registered with ERC?
Yes _____ No _____ *
 3. The test stand used in this test has been referenced in accordance with the requirements of the ATC Code: the relevant reference data are summarised in the engine test report.
Yes _____ No _____ * Not Applicable (for reference tests only) _____
 4. If 'yes' to questions 1 and 2, and 'yes' or 'not applicable' to question 3, the outcome of the test is declared to be:
In accordance with Code _____
- * If 'no' to one or more questions 1, 2 and 3, the outcome of the test is declared to be:
Not in accordance with Code _____
5. Was the test run for full duration and according to the applicable CEC test procedure and any amendments identified for this test type?

5.a.1. If 'yes', the outcome of the test is declared to be:
Operationally valid and completed. _____

5.a.2. If 'yes' and this is a reference test, the outcome of the test is declared to be within the acceptance bands in place at the start of the test for all parameters. Yes _____ No _____

- 5.b.** If 'no' to declaration #5, the outcome of this test is declared to be:
- Operationally valid and stopped by sponsor _____
 - Operationally valid and terminated _____ (*Further comment required below)
 - Operationally invalid and completed _____ (*Further comment required below)
 - Operationally invalid and aborted _____ (*Further comment required below)

*Comments are required where indicated and for each negative response, if any, to the above.

COMMENTS

Typed name/title

Signature

Date

Form F.3 Control Form for Changes to CANDIDATE Test Data

Formulation/Stand Code _____ Test No. _____

| Test Results as Originally Reported | | Test Results as Changed | |
|-------------------------------------|--------|-------------------------|--------|
| Variable | Result | Variable | Result |
| | | | |
| | | | |
| | | | |
| | | | |
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Reason for Changes to Test Results

| |
|--|
| |
| |
| |
| |
| |

Your Signature

Lab Manager's Signature

Date

Form F.4 Control Form for Changes to REFERENCE Test Data

Formulation/Stand Code _____ Test No. _____

| Test Results as Originally Reported | | Test Results as Changed | |
|-------------------------------------|--------|-------------------------|--------|
| Variable | Result | Variable | Result |
| | | | |
| | | | |
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Reason for Changes to Test Results

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Your Signature

Lab Manager's Signature

Date