

EMERGENCY ENGINE ALTERNATORS
CRANKCASE OIL ANALYSIS

1. GENERAL

1.01 This practice specifies the use of laboratory analysis of crankcase oil as an aid to emergency engine alternator maintenance and applies to all permanently installed and trailer mounted emergency engine alternator units.

1.02 The oil analysis method will detect potential sources of engine trouble such as: fuel dilution, water in the crankcase oil, metallic deposits and areas of excessive engine wear. The recommendations made in the lubricating oil analysis report will assist in determining the maintenance work required on a particular engine.

1.03 The analysis of crankcase oil will also determine the frequency of lubricating oil changes and the servicing of lubricating oil filters specified in other practices. The necessity for doing this work will be determined by the recommendations made in the report of the lubricating oil test for a particular engine. If the oil analysis report does not specify an oil change within a 5 year period, an oil change at the end of 5 years will be mandatory. All other scheduled tests and routine work on this equipment shall be continued.

1.04 The Division Plant Superintendent's office will furnish to the Faber Laboratories, 1313 W. Randolph Street, Chicago, Illinois, 60607, the following:

- (a) Identification of each engine including the make, model, size, type, identification number, crankcase capacity, and date of last oil change.

NOTE: The identification number will be the Location Code assigned to each address within the District. If more than one engine is located within a building, identify each engine with the Location Code and suffix digit. The identification number must be stenciled on each engine.

- (b) Title and mailing address of each supervisor responsible for taking the oil samples.
- (c) Identification of Division Plant Superintendent responsible for maintenance of each engine.
- (d) Mailing address of each Division Plant Superintendent to receive the billing invoices.
- (e) Mailing address of each Division Plant Superintendent (Staff) to receive oil analysis reports.

Each Division Plant Superintendent's office will, as the need indicates, furnish to the Faber Laboratories any changes in the above information.

2. PROCEDURE

2.01 Ordering Supplies - It will be the responsibility of the Division Plant Superintendent's office to order the following initial oil sampling supplies for each location from the Faber Laboratories.

- (a) Sampling Syringe: A syringe equipped with a pliable plastic stem to obtain the crankcase oil sample. (See Exhibit 1). The bottle supplied with the syringe is for protection purposes only and is not to be used for oil samples.
- (b) Sampling Bottle: A two-ounce plastic bottle, with screw cap, to fit the sampling syringe.

- (c) Mailing Container: A container and a gummed label self-addressed to Faber Laboratories.

2.02 The Faber Laboratories will:

- (a) Ship the supplies directly to the supervisor responsible for taking the oil sample.
- (b) Furnish all subsequent sample bottles and mailing containers on a no-charge basis.
- (c) Provide repair or replacement of the sampling syringe.
- (d) Send billing invoice to Division Plant Superintendent responsible for each location.

2.03 The Division Plant Superintendent's office will handle all contacts with the Faber Laboratories with the exception that all oil samples will be mailed directly to the Faber Laboratories by the supervisor responsible for taking the oil sample.

2.04 Care of Syringe and Oil Sample Bottles

When the syringe is not being used, it is recommended that the empty protector bottle supplied with the syringe be kept on the syringe head to keep foreign matter out of the internal parts. The syringe should be stored in a vertical position with the stem pointed down over a drip pan to facilitate drainage. Spare bottles, and mailing containers should be stored in a clean, dry location.

NOTE: Do not alter the design of the syringe stem or the holes in the syringe stem end.

2.05 When to Take the Oil Sample - Oil samples will be taken once in February and once in August of each year. The lubricating oil sample should be obtained within 30 minutes from the time the engine

has been shut down after a scheduled routine engine run. If possible, take one of the samples after the 7-hour annual engine run.

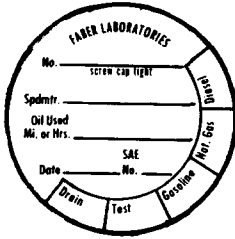
2.06 Taking the Oil Sample - After the engine has been run to thoroughly mix the oil in the crankcase, stop the engine and proceed as follows:

- (a) Remove the self-addressed label from inside the sample bottle.
- (b) Make sure that the sample bottle is tightly sealed on the syringe head and that the syringe handle is as close as possible to the syringe barrel. Insert the sampling syringe in the dip-stick hole, or other means of access until the stem is touching the bottom of the crankcase. (See Exhibit 1).
- (c) While holding the stem on the bottom of the crankcase, draw the syringe handle out and hold until the bottle is at least 3/4 full. If the bottle does not fill on one pull of the syringe handle, lift the stem above the oil level before pressing handle down to the syringe barrel. Replace the stem on the bottom of the crankcase and draw again.
- (d) When the bottle is filled to the proper level, lift the stem above the oil level, about one foot, and pump the syringe handle several times to clear the stem.

NOTE: When sampling more than one engine using the same syringe, make sure that the stem has drained well before sampling another engine. Do not pour oil sample from one sample bottle to another.

2.07 Marking and Mailing the Sample - A cardboard mailing container will be forwarded to the various locations, when samples are required, and will consist of:

a two-ounce plastic bottle with a screw cap, a gummed label, as shown in Figure 1 glued to the cap, and a self-addressed label to Faber Laboratories inside the sample bottle.



Top of Sample Bottle Cap
Figure 1

When the sample is ready to be sent to the Faber Laboratories, proceed as follows:

- (a) Record the following information on the label that is glued to the bottle cap:
 - No. - Identification number of the engine.
 - Spdmtr. - Total hours the engine has been operated. Compute from engine log, if elapsed time meter is not provided.
 - Oil Used
 - Mi. or Hrs. - Date of the last oil change.
 - Date - Date oil sample was taken
 - SAE No. - Viscosity of oil used in the engine.
 - Drain - Leave blank.
 - Test - Leave blank.
 - Gasoline - If this type of engine fuel is used, place an X in this block.
 - Nat. Gas - If this type of engine fuel is used, place an X in this block.
 - Diesel - If this type of engine fuel is used, place an X in this block.
- (b) Remove the bottle with the sample oil taken from the syringe and cap

the bottle. Retighten cap after the oil sample has cooled and place in the mailing tube.

- (c) Seal the container with the self-addressed label that was previously removed from inside the bottle. The mailing label will contain postage and the return address of the emergency engine location.
- (d) Mail container to Faber Laboratories.

3. ANALYSIS REPORTS

3.01 The Faber Laboratories will mail two copies of the oil analysis reports to the Division Plant Superintendent's office, who will retain one copy for review and file, and forward the second copy to the Supervisor responsible for the maintenance of the engine. The field supervisor will then investigate and follow-up recommendations contained in the oil analysis report.

3.03 Oil analysis reports must be retained for the life of the engine.

4. BILLING

4.01 To reduce the number of individual bills to be passed for payment, the Faber Laboratories will bill each Division Plant Superintendent twice each year for:

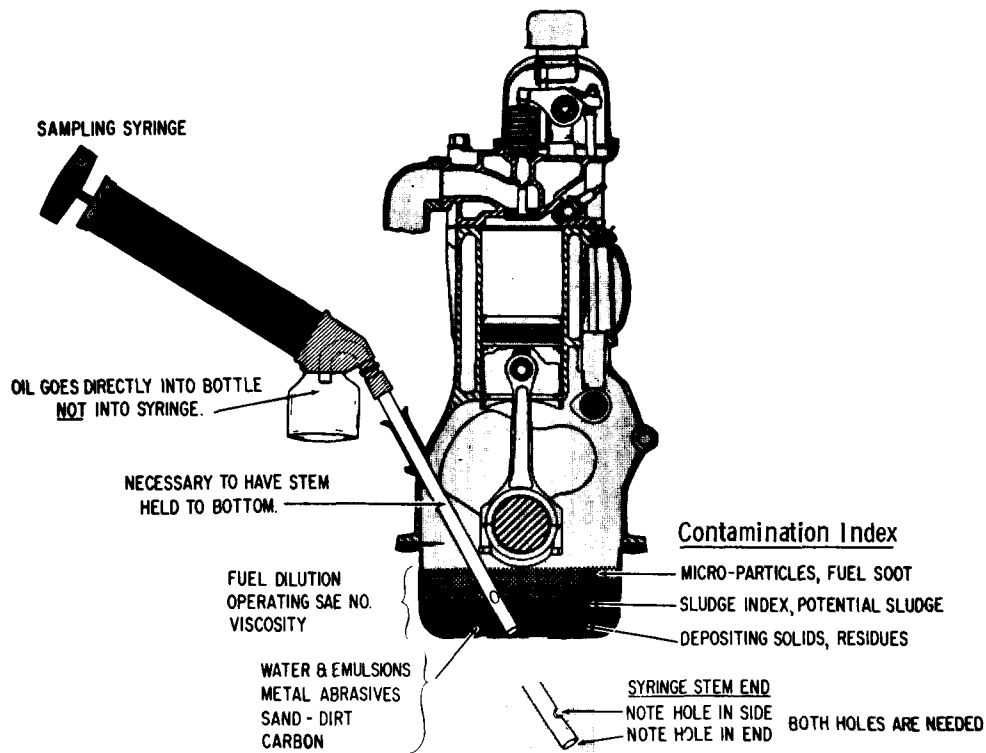
- (a) Oil sample analysis sent to the company.
- (b) Syringes sent to the company.

NOTE: Only the initial supply of sample bottles and mailing containers will be billed to the Division Plant Superintendent's offices. All subsequent sample bottles and mailing containers will be furnished by the Faber Laboratories on a no-charge basis.

4.02 To insure proper billing, invoices will include the identification number of the emergency engines for which oil sample tests were performed.

EXHIBIT 1

METHOD FOR TAKING AN OIL SAMPLE



- (1) Push syringe stem to bottom of crankcase thru oil dip-stick hole.
- (2) Pull syringe handle out, holding stem to crankcase bottom until bottle is full.
- (3) Raise stem one foot before pumping handle several times to discharge excess.

Screw bottle caps on tightly; retighten after sample has cooled.

DO NOT POUR FROM ONE OIL SAMPLE BOTTLE TO ANOTHER. DO NOT ALTER STEM DESIGN OR HOLES.