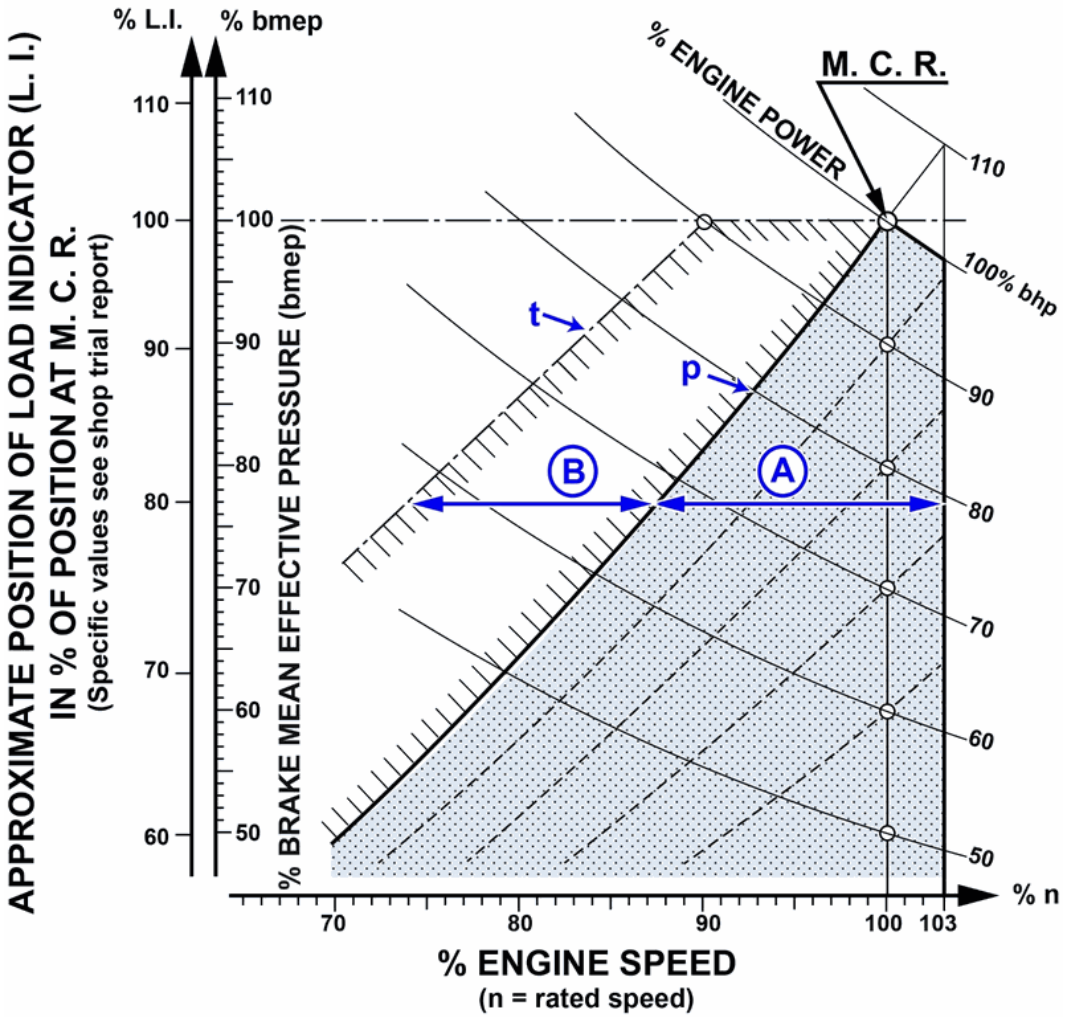

MEWB - Motor Plants

1. Which of the following conditions would NOT be considered a valid reason for the diesel engine to operate in the area indicated by letter "B" shown in the illustration

MO-0126



- Operating the vessel against high winds and current
- Operating the vessel in shallow water
- Operating with a fouled or damaged propeller
- **Operating with minimal hull drag and under light draft**

Note:
Area B on the load diagram indicates a temporary overload condition, which is appropriate only when hull or propeller resistance is high. Operating with minimal hull drag and light draft would not necessitate this overload and is therefore an invalid reason.

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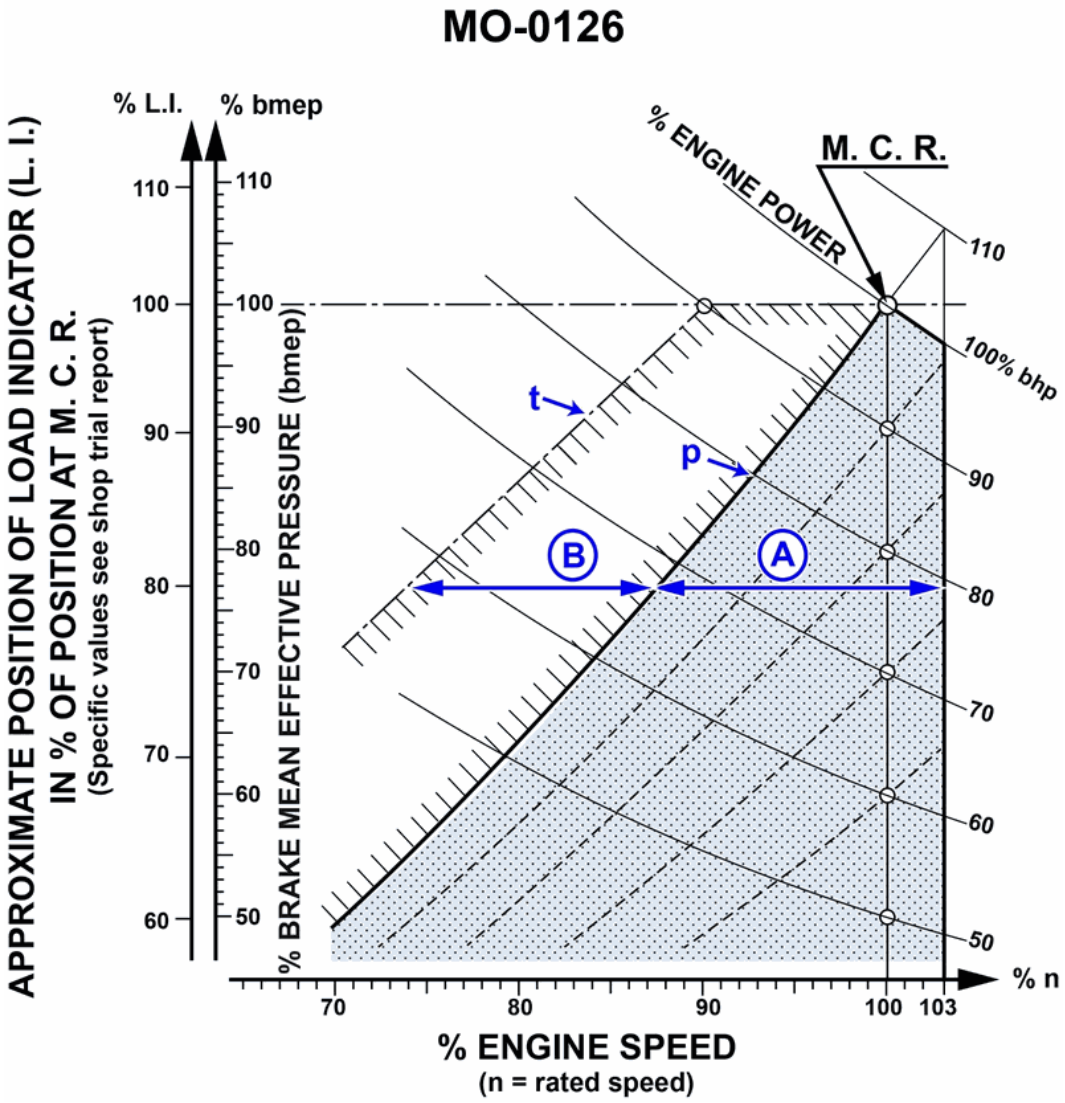
2. The diagram shown in the illustration may be used to determine the proper operation of the engine. Which of the following statements represents an accurate interpretation of the diagram



- The engine may be operated in any area of the diagram provided steps are taken to reposition the load indicator.
- Operation within area "B" is permitted for extended time periods provided no changes are made to the air intake system.
- **Ideally the engine should be operated in area "A"; however, it is permissible to intermittently operate the engine in area "B".**
- Assuming the load indicator reads 90% and the engine speed is at 80% the engine can be operated until maintenance requirements become apparent.

Note:
Area A represents the normal continuous operating range, while Area B allows for limited, intermittent operation.

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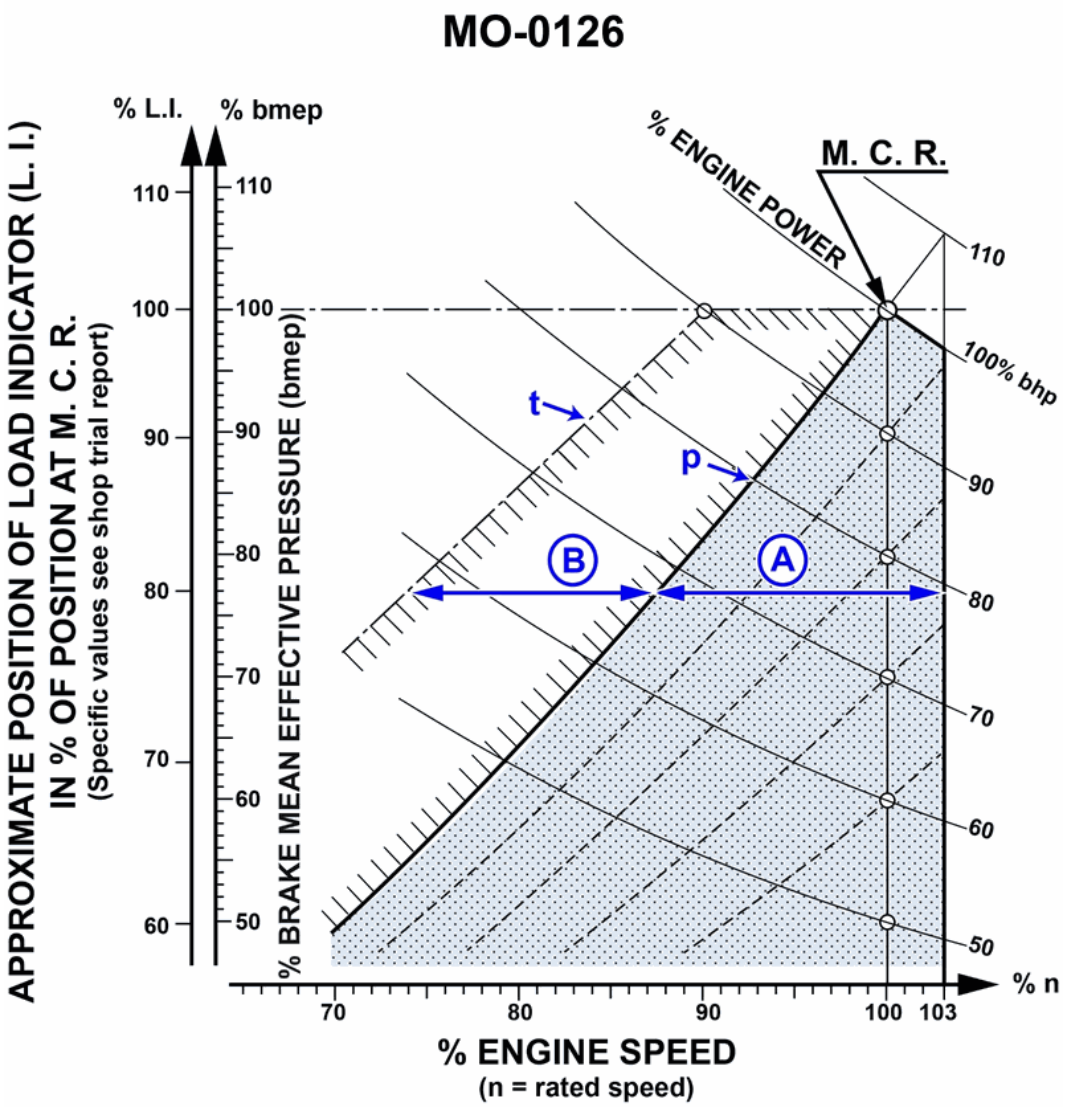
3. Which of the following conditions will cause the engine to operate in area "A" of the diagram shown in the illustration



- **Excessive propeller cavitation**
- Inclement weather
- Fouled hull
- Damaged propeller blades

Note:
Excessive propeller cavitation reduces propeller power absorption, causing the engine to run faster and shift to area 'A' on the load diagram at the same fuel setting.

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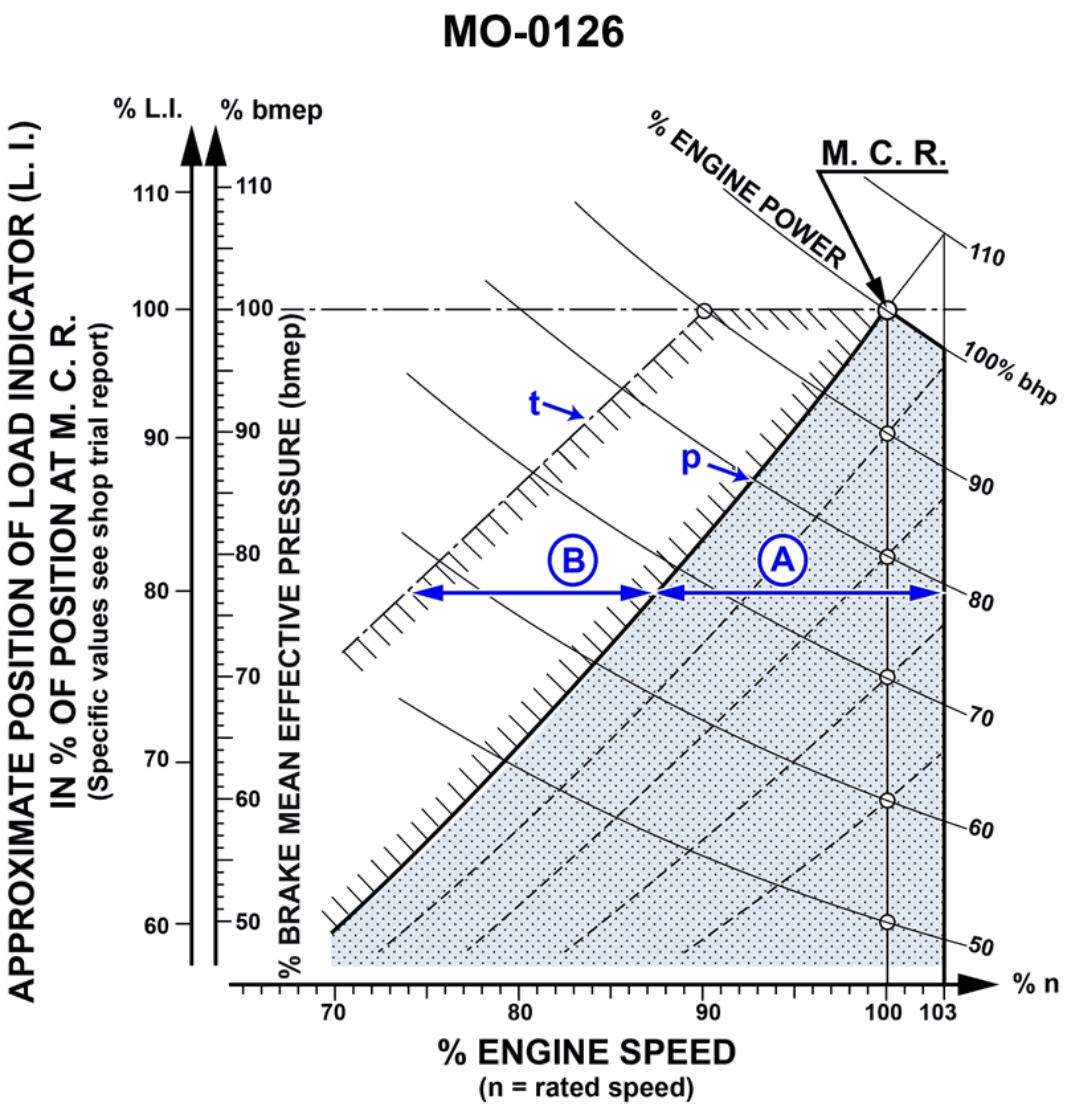
4. Which of the following conditions will cause the engine to operate in area "A" of the diagram shown in the illustration



- Fouled hull
- Inclement weather
- Running in shallow water
- **Running under "light ship" conditions**

Note:
Operating under light ship conditions reduces propeller load, resulting in lower brake mean effective pressure (bmep) and moving the engine's operating point to area "A" on the load diagram, characterized by normal or higher engine speed and reduced bmep.

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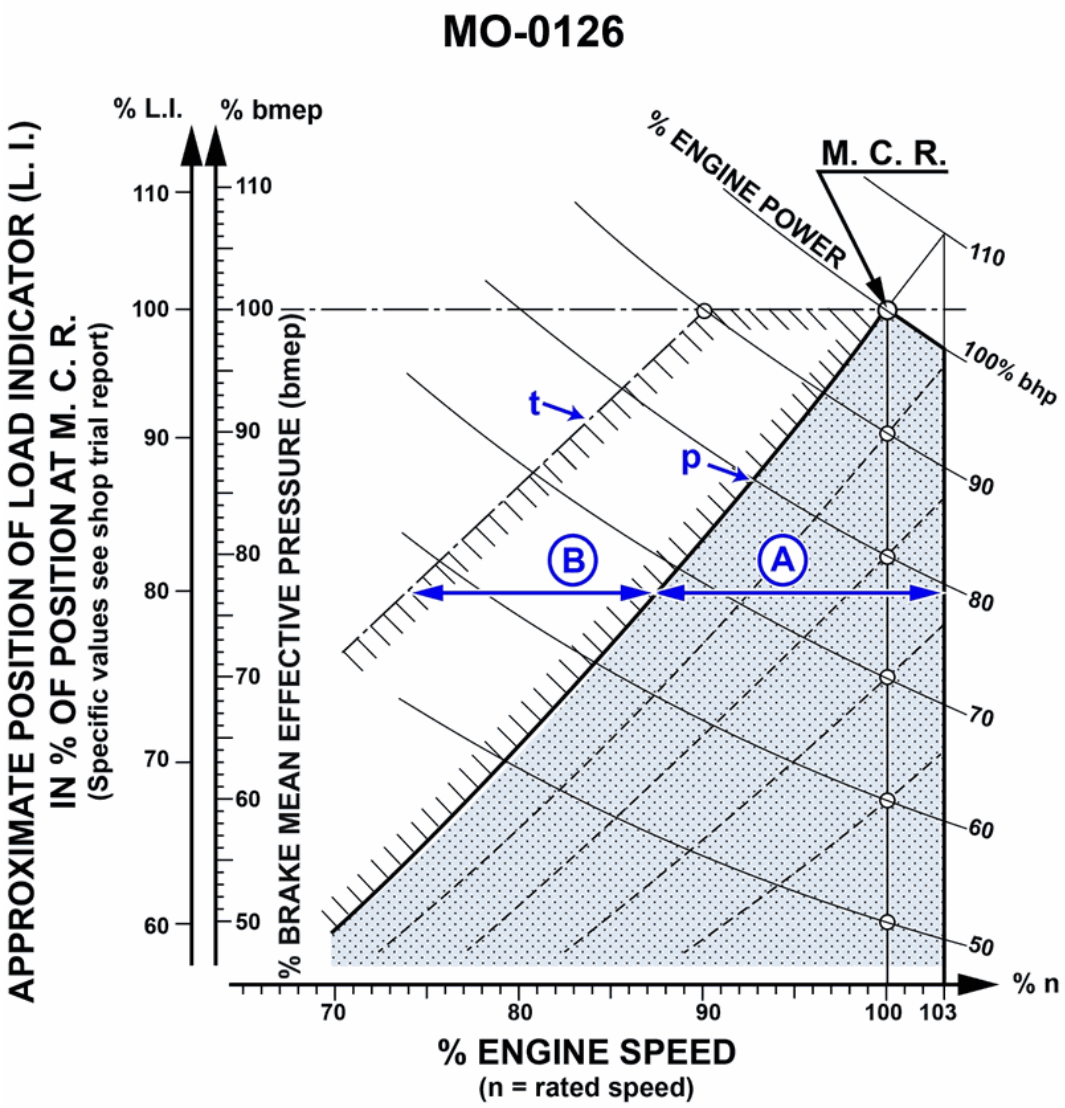
5. Which of the following conditions will cause the engine to operate in area "A" of the diagram shown in the illustration



- Fouled hull
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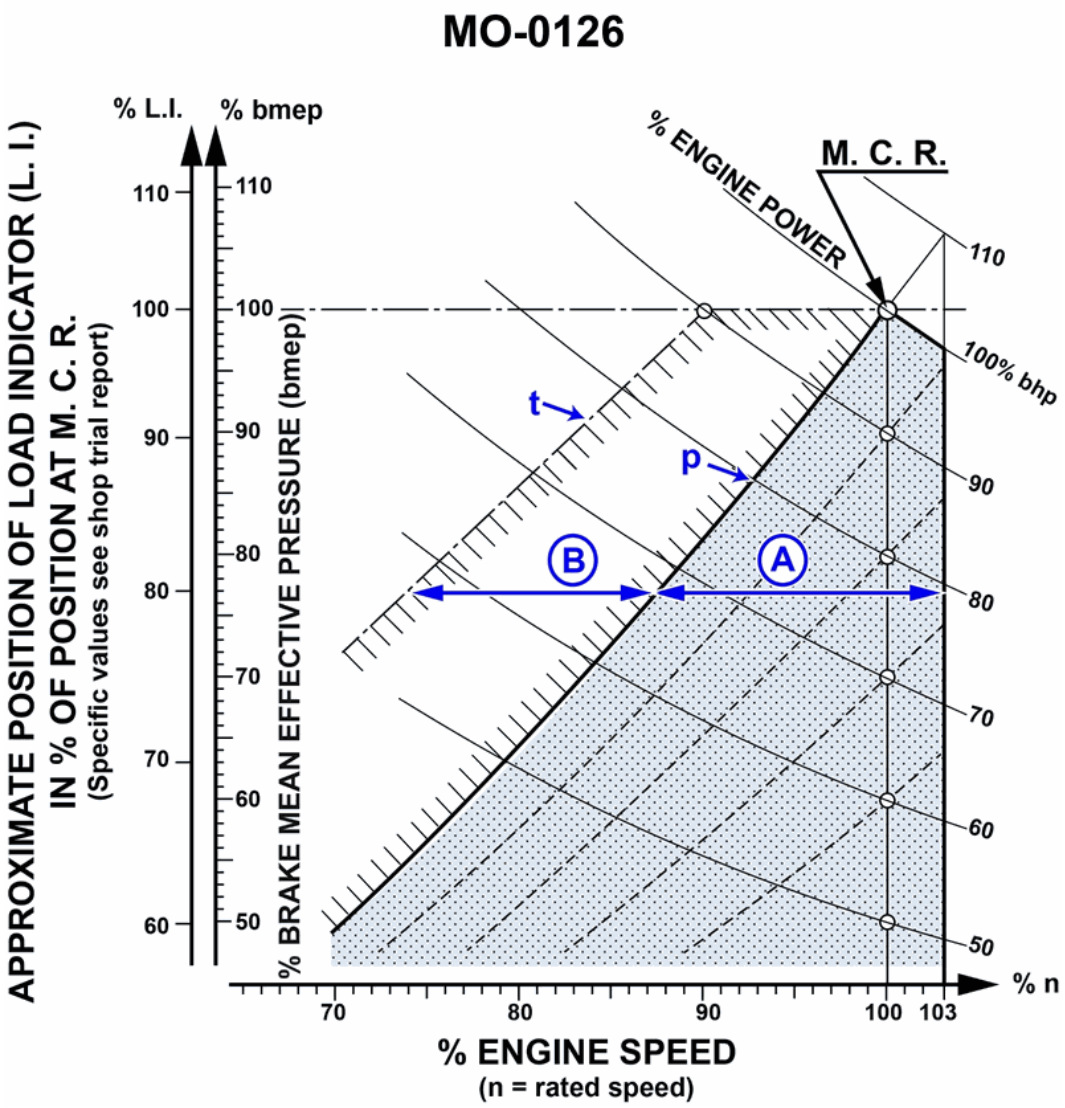
6. Which of the following conditions will cause the engine to operate in area "A" of the diagram shown in the illustration



- Fouled hull
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Note:
Operating under light ship conditions reduces propeller load, resulting in lower brake mean effective pressure (bmep) and moving the engine's operating point to area "A" on the load diagram, characterized by normal or higher engine speed and reduced bmep.

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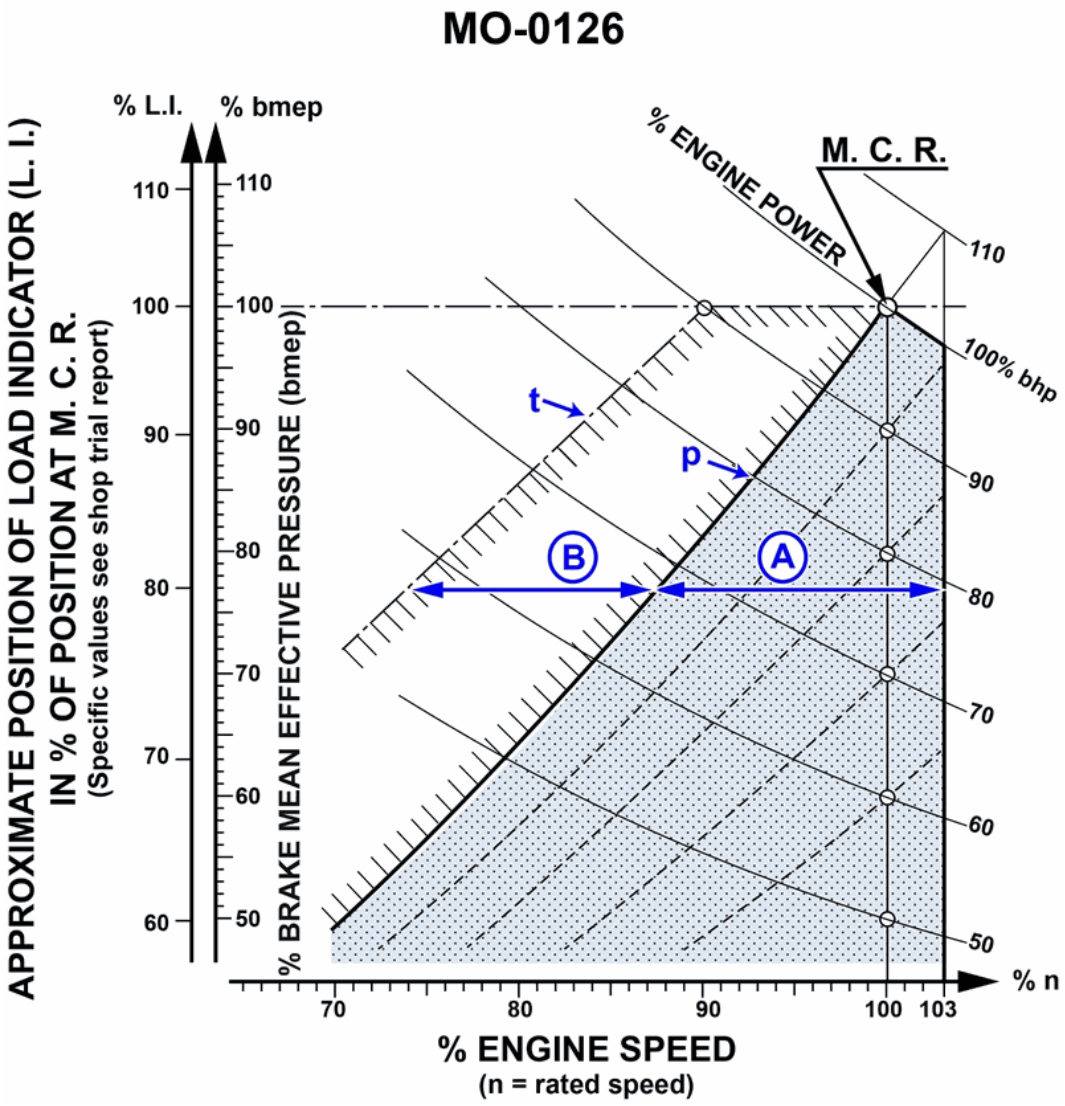
7. Line "P" in the illustration is the _____



- line of maximum horsepower
- **propeller curve**
- line of maximum efficiency
- exponential line

Note:
Line 'P' represents the propeller curve, which illustrates the relationship between engine speed and load for a fixed-pitch propeller. This curve reflects the propeller's power absorption as engine speed increases, following an approximately cubic relationship. The other options represent limits or unrelated concepts not depicted by this specific line on the engine load diagram.

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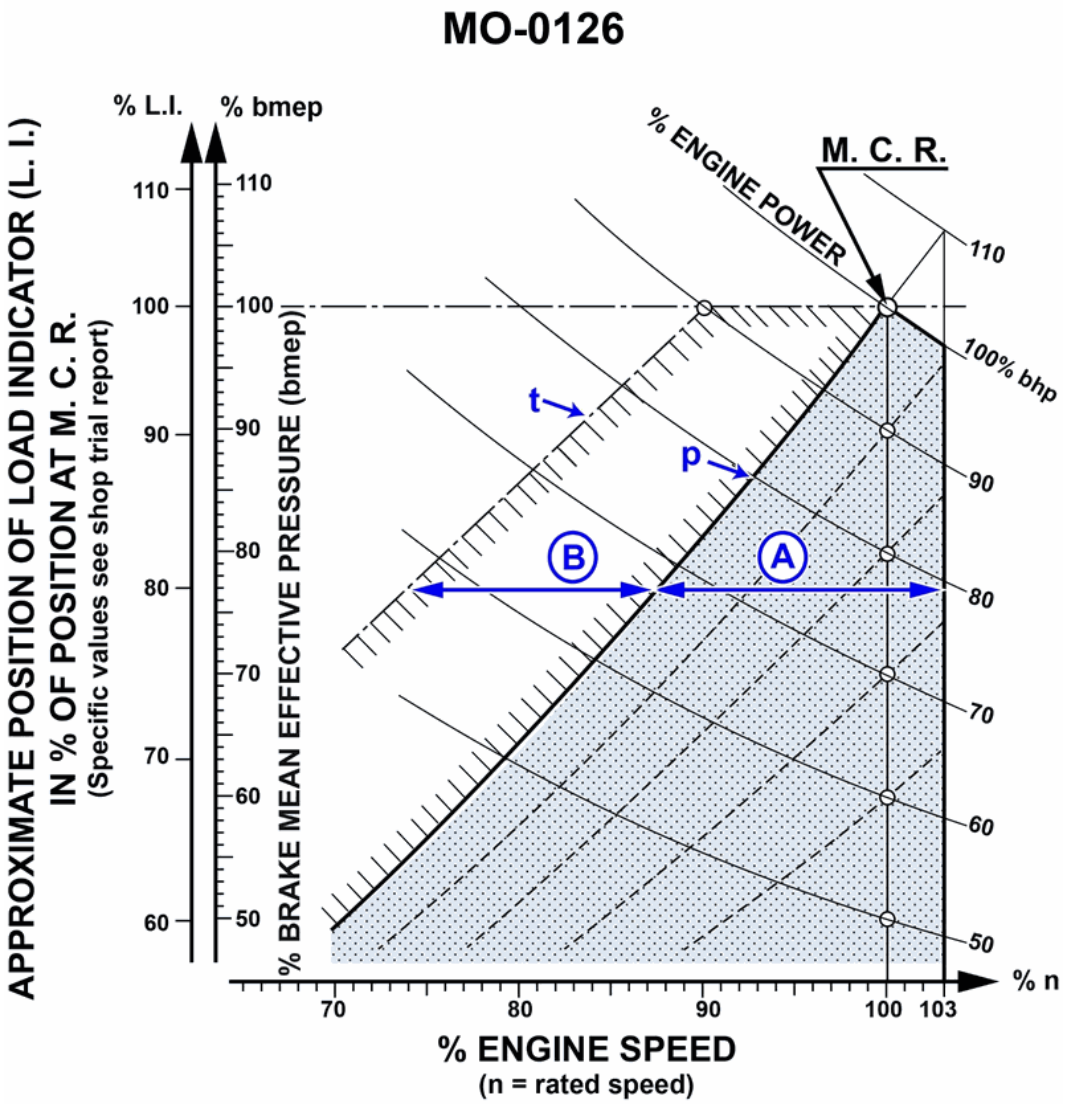
8. Line "P" in the illustration is the _____



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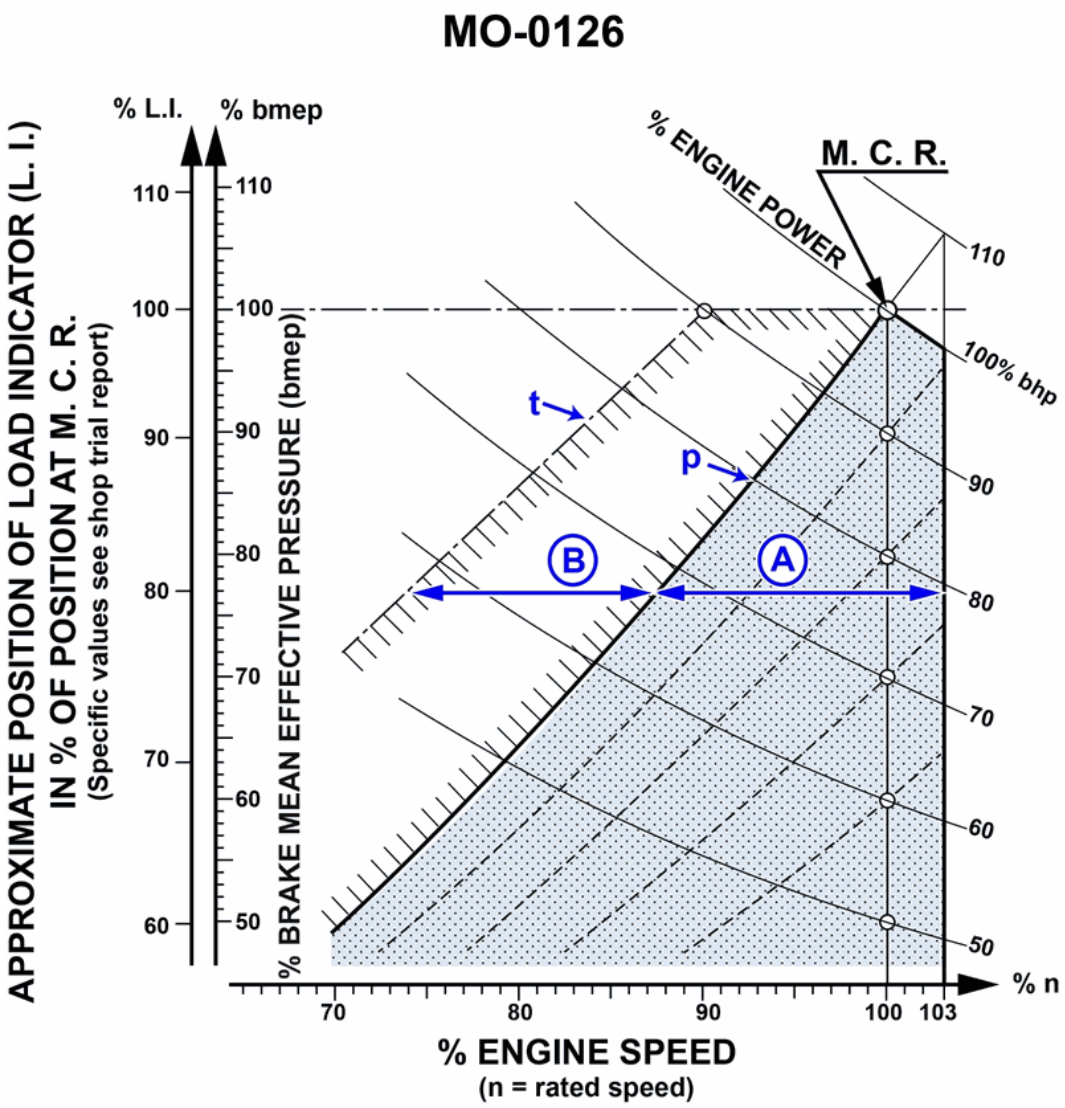
9. According to the illustration, which of the following statements is true concerning the operation of a large slow speed diesel engine



- Operating in the shaded area labeled "A" would result in the engine being overloaded.
- Operating in the area labeled "B" would result in the engine being under-loaded.
- **Operating near or on the line labeled "P" would result in the greatest engine operating efficiency.**
- All of the above

Note:
Operating near or on line 'P' indicates the engine's most efficient operating point, representing optimum fuel economy and minimum specific fuel consumption within the permissible operating envelope.

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10. The difference in crank lead between the upper and lower cranks of an opposed piston engine causes the lower crankshaft to _____.

- receive less power than the upper shaft
- **receive more power than the upper shaft**
- operate the fuel oil booster pump
- rotate faster than the upper shaft

Note:
The lower crankshaft receives more power due to its leading position, which allows it to experience peak combustion pressure at a more advantageous crank angle, maximizing torque and work performed during the power stroke.
