engine to warm to temperature needed for effective catalytic control and whether maximum time limits should be included."

The EPA should consider the amount of time spent during periods of startup and shutdown as de minimis in nature based on the operating characteristics for engines in the natural gas compression industry and should not impose numerical standards during those events. This is especially true of smaller engines (under 500 hp) at rural, area sources. If the EPA feels that they must define the periods of SSM, then they should consider a definition that includes the following:

- The engine is not performing its intended function (under load)
- The engine is operating during periods associated with warm up and cool down as discussed above.
- The engine is operating for the purpose of diagnosing or repairing a malfunction of the engine or driven equipment
- The engine is temporarily operating in a manner that does not enable post combustion controls to be fully effective. It may be appropriate to include a time limit on this category to clarify "temporarily". However, the time limit should not be the primary factor but rather a measure to prevent abuse by routine operation at partial loads.

Summary

The GCA believes that the numerical emissions levels proposed in the rule are inappropriate and should be removed. The GCA believes that the emissions during SSM are de minimis in nature and regulations for SSM is not warranted for area sources and should be in the form of a work practice for major sources.

Comments on Maintenance Practices

For the area source requirements of the proposed MACT standard, the EPA has chosen to adopt maintenance practices rather than emission standards. These maintenance practices have been identified for small rich burn and lean burn area source engines. The proposed maintenance practices will require affected facilities to change the engine oil at a minimum of every 500 hours (approximately every 21 days), replace the spark plugs every 1000 hours (approximately every 42 days), as well as inspect all hoses and belts every 500 hours and replace as necessary for lean burn engines greater than or equal to 50 HP and less than or equal to 249 HP. For all engines less than 50 HP, the proposed maintenance practices will require affected facilities to change the engine oil at a minimum of every 200 hours (approximately every 8 days), replace the spark plugs every 500 hours, and inspect all hoses and belts every 500 hours.

Within the preamble of the proposed rule, the EPA has stated that the maintenance practices were developed in order to minimize the burden of the proposed rule and they believe the maintenance practices would not place a substantial burden on private owners and small entities. The EPA further states they believe most owners and operators are already using these practices. The proposed rule also requires extensive record keeping such as: oil and filter change dates, oil amounts added and corresponding hour on the hour meter, fuel consumption rates, air filter change dates, and records of repairs and other maintenance. These recordkeeping requirements could prove to be quite burdensome on private owners and small entities. Within the comments to the proposed rule, the GCA will document potential issues with the proposed standards as well as offer potential solutions to these said issues. Within the background document for the proposed rule, the EPA specifically requested comments on the proposed maintenance practices. Due to the impact these maintenance practices could have on the affected facilities, the GCA submits the following comments in an attempt to further the understanding of the EPA regarding the application of the maintenance practices standards.

With the current proposed rule, the EPA has proposed maintenance practices as a means of Generally Available Control Technology (GACT). Section 112(d)(5) of the CAA allows the EPA to promulgate standards for GACT. GACT is further described under the preamble to the proposed rule as:

> ... methods, practices and techniques which are commercially available and appropriate for application by the sources in the category considering economic impacts and the technical capabilities of the firms to operate and maintain the emissions control systems.

The GCA appreciates the EPA proposing maintenance practices as an alternative to emission limitations in place of GACT. As such, the GCA would like the opportunity to comment in regards to the following aspects of the maintenance practices: Emission Reductions, Frequencies, Recordkeeping, Costs, as well as Proposed Alternatives.

EMISSION REDUCTIONS

As a means of GACT, the EPA has determined that maintenance practices should constitute a generally available control technology. Within these maintenance practices, the EPA has determined that a combination of oil changes, spark plug changes, and belts and hoses checks at varied intervals would result in the greatest amount of emission reductions for non-emergency spark ignited internal combustion engines. While these practices are essential in maintaining engine reliability, it is unknown to the GCA as to the reasoning behind the short term intervals chosen for the associated maintenance practices. The GCA has also attempted to locate the basis of the EPA's reasoning of the proposed maintenance practices within the docket, but was unable to find any supportive documentation. The GCA is under the assumption that the EPA has tied the affected spark ignited engines to that of the diesel and mobile source engine categories, and as a result has applied similar maintenance practice strategies under the assumption that they will result in optimal emissions. While required maintenance practices may ensure optimum engine performance and reduced HAP emissions, various frequencies apply to the spectrum of the subject makes and models of spark ignited reciprocating engines.

During the course of the comment period, the GCA has obtained information from various engine manufacturers' regarding optimal engine operation. Information obtained can be found under Attachment "A" – Manufacturer's Recommendations for Maintenance.

In regards to the proposed spark ignited engine maintenance practices, a large amount of these engines are manufactured by Ajax, Cummins, Waukesha and Caterpillar. Of the information obtained from engine manufacturer representatives during the comment period, the following is summarized from the attached information.

Ajax

Oil Change Interval: The oil change interval for Ajax engines has been established as once a year (8760 hours). The key feature that allows this long change interval is the crosshead design whereby the power cylinder is separated from the crankcase and uses a sealed piston rod for the mechanical connection. Therefore, no combustion blowby products get into the crankcase to contaminate the oil (thus more frequent oil changes would not benefit the optimal operation of the engine).

Spark Plug Service Interval: Since 1997, all Ajax engines having 2-spark plugs per cylinder have used the Stitt SR-107-2 spark plug in the pre-chamber and S-79-2 plug in the main chamber, which have demonstrated nominal plug life of 4000 hours for the pre-chamber plug and 8000 hours for the main chamber plug. These long spark plug change intervals are achieved due to the low 6.1 to 1 compression ratio and low rated BMEP for the Ajax power cylinder. Following these spark plug change intervals will keep the Ajax engines in optimum operating condition for consistent emissions levels.

Cummins

Oil Change Interval: Cummins recognized the use of high capacity (deep sump) oil pans. The use of high capacity oil pans allows for engines to optimally operate for extended periods of times. As an OEM recommended oil change frequency, Cummins recommends oil changes in the range of 750 hours. Cummins also recommends that at 750 hours, spark plugs be removed and inspected. This removal and inspection can be conducted up to three times (2,250 hours) prior to OEM recommended spark plug replacement.

Cummins also recognizes that due to the varying field conditions, oil change frequencies can be extended through the use of oil analysis. To further explain this concept, engine operators will often utilize a third party to evaluate engine oil sampled during regularly scheduled preventative maintenance events, these oil analysis results will then inform the engine operator as to the expected oil life remaining and the necessary time to change the engine oil.

Waukesha

Oil Change Interval: Waukesha also recognized the use of high capacity oil pans and the ability to lengthen oil change intervals. Of the listed Waukesha engines, oil change recommendations range from 900 to 2,350 hours of operation.

Caterpillar

Oil Change Interval: Caterpillar recognizes the gas engine oil specification, oil volume, oil temperature, site fuel gas employed, the engine load factor, and the air/fuel ratio each impact the effective life of the engine lubricating oil. Lean burn combustion has lower oxides of nitrogen than rich burn combustion, which reduces oil nitration. Even low levels of hydrogen sulfide (H2S) in the wellhead gas used as fuel combines with moisture (a natural byproduct of combustion) and forms sulfuric acid within the lubricating oil. Caterpillar has specific base engine oil change intervals for each engine model since designs provide differences in many of the above parameters. The base engine oil change interval is recommended in all applications to be monitored by Caterpillar SOS oil analysis program in order to monitor the condition of the oil. This analysis can better determine the maintenance requirement for a specific engine at a given site installation. SOS Oil analysis includes these tests: Wear Rate Analysis monitors wear by detecting, by identifying, and by assessing the amount of wear metal and the type of wear metal that is in the oil (tribology); Contamination tests for water or glycol; Oil Condition Analysis determines the loss of the oil's lubricating properties (an infrared analysis is used to compare the properties of new oil to the properties of the used oil sample). Successful application of Caterpillar SOS oil analysis may be used as a basis for determining the oil change interval for a given engine at a given site. Lower compression ratio gas compression engines using wellhead gas of the following models have the listed base oil change intervals before implementation of Caterpillar SOS oil analysis: G3300 – 750 hrs.

Spark Plug Service Interval: Each engine model's design and application presents different spark plug life possibilities including: engine compression ratio, designed plug gap, site conditions: load, speed, air/fuel ratio, fuel quality, altitude, ambient temperature. Many modern spark plug designs incorporate precious metals to provide high hardness at combustion temperatures. The arcing electrode surface designs provide longer gap life than in the past. There is a relationship between good maintenance of the spark plug and efficient engine performance. A clean spark plug with the proper electrode gap requires less voltage. Lower voltage generally enables longer spark plug service life. When cleaning the spark plug, cleaning the threads for proper seating of the plug is important to optimize heat transfer for the plug to increase its life. Always installing a new spark plug gasket when reinstalling a spark plug provides proper sealing and heat transfer for the spark plug. Lower compression ratio gas compression engines using wellhead gas of the following models have the listed recommended spark plug inspection service and replacement intervals before considering specific site installation/application issues/experience: G3406NA – 1500/1500 hrs, G3300NA – 1500/1500, G3300TA – 750/750 hrs.

All Engines

Oil Sweetening: A general installation application should be noted for engines of many different engine manufacturers. Some engine installations may employ used engine crankcase oil supply to the driven reciprocating compressors for lubrication of compression cylinders. This demands fresh engine lubricating oil added to the engine pan on a continuous basis, "sweetening" the engine's oil refreshing the oils chemistry and additive package. In applications where oil sweetening is in place it is recommended the oil be removed once per year and the oil pan cleaned of contaminating materials.

As can be seen by the previous four engine manufacturer recommendations, manufacturer defined optimal engine operations can vary significantly by make, model, application and site conditions including fuel quality. As a result, it is difficult for the GCA to determine the relevance of the frequent maintenance practices to the actual environmental benefit that would be realized as opposed to aligning maintenance practices with individual maintenance plans which would provide to the extent practicable the operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions. Due to the significant amount of present and past engine makes and models, the recommended maintenance practices for optimal engine efficiency can range from several weeks to a year. The GCA further believes that although the EPA is going down the right path for GACT control for smaller spark ignited engines, the proposed regulations need to be reviewed prior to finalization. The GCA recommended alternatives can be found under the "Proposed Alternatives" section of the comments.

FREQUENCIES

As part of the proposed maintenance practice GACT standards, the EPA is proposing two separate frequencies in relation to spark ignited engines. These frequencies are based upon engine run hours. It is assumed by the GCA that "hours" refers to engine run hours and not hours in general. A concern of the GCA is that the EPA is utilizing strategies for diesel and mobile source engines to regulate the spark

ignited stationary engines. The inconsistency with this approach is that with mobile engines, an engine might be utilized one or two hours per day on an as needed basis. Given this scenario, maintenance practices based upon the proposed schedules are very attainable. In regards to stationary spark ignited engines that potentially (and most likely) run around the clock, these proposed frequencies are not attainable and would result in numerous additional preventative maintenance trips to meet the requirements. As a result of the additional trips, the regulated community would experience a great amount of additional costs incurred. It should also be noted that these spark ignited internal combustion engines are industrial grade and are designed to operate in a multitude of weather conditions.

The maintenance practice frequencies should also be considered for their potential detriment to the environment. As previously mentioned above, these maintenance practices are above and beyond what engine manufacturers recommend for optimal engine performance. As such, the realized environmental benefits of the proposed frequencies are insignificant when compared to the manufacturer's recommendations for optimal engine performance. With this being said, the EPA should consider the amount of additional trips required to comply with the proposed limitations, these trips will account for greatly increased amounts of waste oil, as well as the associated tail pipe emissions from company vehicles traveling to the un-manned field locations where these engines are located. It should also be noted that within the oil and gas sector, these un-manned facilities can require multiple hour trips to access.

Engines <50 HP

For rich burn and lean burn engines less than 50 HP, the EPA is currently proposing a 200/500 interval as follows:

- Change oil and filter every 200 hours (approximately 8 days)
- Replace spark plugs every 500 hours (approximately 20 days)
- Inspect all hoses and belts every 500 hours and replace as necessary (approximately 20 days)

As previously mentioned, the proposed frequencies will result in a dramatic increase in additional trips required to comply with the proposed ruling. The proposed oil change, spark plug, and hose/belt inspections are typically performed under engine preventative maintenance. Within the oil and gas industry, these preventative maintenance schedules vary drastically dependent upon make and model, ranging up to 90 day schedules. Given typical industry preventative maintenance schedules, the realized impact of the proposed maintenance practices is immense. It is also due to this increase in preventative maintenance frequency that the GCA believes that the costs associated with the proposed maintenance practices are greatly underestimated. The potential costs to the regulated community have been evaluated as a result of these increased frequencies and will be further explained under the "Costs" portion of these comments.

Lean burn engines 50 – 249 HP

For lean burn engines between 50 and 249 HP, the EPA is currently proposing a 500/1000 interval as follows:

- Change oil and filter every 500 hours (approximately 20 days)
- Replace spark plugs every 1000 hours (approximately 41 days)
- Inspect all hoses and belts every 500 hours and replace as necessary (approximately 20 days)

As previously mentioned, the proposed frequencies will result in a dramatic increase in additional trips required to comply with the proposed ruling. The proposed oil change, spark plug, and hose/belt inspections are typically performed under engine preventative maintenance. Within the oil and gas industry, these preventative maintenance schedules vary drastically dependent upon make and model, ranging up to 90 day schedules. Given typical industry preventative maintenance schedules, the realized impact of the proposed maintenance practices is immense. It is also due to this increase in preventative maintenance frequency that the GCA believes that the costs associated with the proposed maintenance practices are greatly underestimated. The potential costs to the regulated community have been evaluated as a result of these increased frequencies and will be further explained under the "Costs" portion of these comments.

Frequency Components

Oil Change: The GCA has concerns as to why such frequent engine oil changes were chosen. It is the understanding of the GCA that oil changes which are more frequent than engine manufacturer's recommendations for optimal engine performance do not affect engine emissions for spark ignited internal combustion engines burning natural gas.

Spark Plugs: The GCA fully concurs with the EPA in that effective spark plug maintenance (check, clean, adjustment, and replacement) is essential for optimal engine air emissions. The GCA does have concerns though with the EPA requiring mandatory spark plug changes at the proposed intervals. The GCA requests that the EPA considers the removal and inspection of spark plugs in place of the mandatory replacement, allowing for a more feasible useful life for the associated spark plugs as well as keeping with current recommended practices.

Belts and Hoses: The GCA is unaware of the impacts that belts and hoses would have on engine air emissions. Should a belt or hose break, the engine would shut down due to the engine safety shutdown devices and cease to operate.

RECORDKEEPING

Within the preamble of the proposed regulations, the EPA has stated that owners and operators of existing stationary spark ignited engines located at area sources subject to the maintenance practice requirements are required to keep records that show that the practices are being met. It also goes on to state that such records are to be kept on-site and shall include the following information:

- Oil and filter change dates
- Oil amounts added and corresponding hour on the hour meter
- Fuel consumption rates
- Air filter change dates
- Records of repair and other maintenance performed

The GCA would like to note that a vast majority of these smaller HP engines are located at un-manned facilities in remote locations. As such, maintaining records on-site could prove to be quite burdensome and unreliable. The GCA requests that the EPA consider including the requirement for affected engines to maintain the necessary information on-site, or at a nearby field office.

FUEL CONSUMPTION RATES

In regards to the requirement to maintain fuel consumption rates, the GCA requests that the EPA consider removing this requirement. A majority of these smaller HP engines operate on wellhead gas with a wide variety of gas constituents and Low Heating Value (LHV). They are not equipped with fuel meters nor with gas chromatographs to record the constituents of the fuel and the heating value and do not have the ability to monitor the fuel consumption rates. If these fuel meters are indeed required, this could prove to be a significant cost of compliance. The GCA has not included these costs in the cost analysis, but should the EPA determine that fuel meters are necessary; the GCA recommends that the EPA reevaluate the associated cost impacts to account for the meters. If the requirement were to remain in place without fuel meter requirement, it would require that a field technician utilize engine technical data curves in order to obtain an estimate of the current engine fuel consumption rates.

AIR FILTER CHANGE DATES

Air filter change dates should only be required if applicable since not all engines contain air filters. A better means than changing air filters based upon engine operating hours is the actual filter differential pressure attained. The change should only be made when the filter has reached the threshold level of filter differential pressure recommended as the engine manufacturers change level. This can save on the environmental waste of discarding perfectly good filters.

COSTS

As previously mentioned in the above listed "Frequency" section of the comments, the GCA believes that the EPA has greatly underestimated the impacts upon the regulated community that the proposed maintenance practices impose. The GCA tasked member companies to estimate the additional costs

incurred as a result of the additional trips resulting from the proposed rules. The following items were factored into the additional costs incurred as a result of the additional preventative maintenance trips required by the rule:

- Oil purchased for additional oil changes
- Oil filters purchased for additional oil changes
- Spark plugs purchased for additional spark plug changes
- Labor – the fully burdened labor rate was used for additional time
- Travel time
- Waste oil and waste oil filters requiring hazardous disposal generated by additional changes

Engines <50 HP

The GCA member companies determined an average additional annual cost of $369.86 per HP. This equates to approximately $18,123.14 annually for a 49 HP engine. It should also be noted that as previously discussed, the realized emission reductions greater than manufacturer's recommended schedules at the given frequencies are null.

2 stroke lean burn engines 50 – 249 HP

The GCA member companies determined an average additional annual cost of $44.62 per HP. This equates to approximately $11,110.38 annually for a 249 HP engine. It should also be noted that as previously discussed, the realized emission reductions greater than manufacturer's recommended schedules at the given frequencies are null.

4 stroke lean burn engines 50 – 249 HP

The GCA member companies determined an average additional annual cost of $32.64 per HP. This equates to approximately $8,127.36 annually for a 249 HP engine. It should also be noted that as previously discussed, the realized emission reductions greater than manufacturer's recommended schedules at the given frequencies are null.

CONCLUSION

Based upon the above listed dollar amounts, the GCA recommends that the EPA re-evaluate the associated impact of the proposed maintenance practices for GACT. The GCA also suspects that should the frequencies be reduced and aligned with current preventative maintenance schedules, the above listed dollar amounts would be greatly reduced. Should the EPA require any additional assistance in this area, the GCA would gladly offer its expertise in order to offer a more reasonable impact analysis.

PROPOSED ALTERNATIVES

Within the preamble of the proposed rulemaking, the EPA specifically asked for comments regarding alternatives to the proposed rulemaking. The GCA formally requests that the EPA consider the following alternatives as potential solutions to the previously mentioned issues.

Frequencies

As previously mentioned, common preventative maintenance practices vary drastically dependent upon make and model, ranging up to 90 day schedules. During these intervals, a company would then conduct the necessary requirements to ensure the spark ignited engine is operating at an optimal condition. With the proposed frequencies being considered by the EPA, a large number of additional preventative maintenance trips would be required to comply with the rule. As such, the GCA formally requests that the EPA consider the following as alternatives to the proposed maintenance practices:

- Maintenance practices should be aligned with current industry preventative maintenance schedules. These schedules can range up to 90 days, and in some instances beyond. As a potential solution for the various preventative maintenance schedules utilized by the regulated community, the final ruling should require owners/operators to comply with the oil change, spark plug, and belt/hoses requirements on a schedule dictated by the company's internal preventative maintenance schedules ensuring that the engine is operating at optimal conditions. These schedules would then be enforceable by the EPA under the final ruling and would require all of the maintenance practices to be conducted on these intervals.
- As an alternative to aligning maintenance practices with existing preventative maintenance schedules, the GCA suggests that the EPA consider operator defined maintenance plans. The operator defined maintenance plans would offer a solution to the issue regarding the different requirements for various engine make and models. As previously noted, engines such as Ajax, only require annual oil changes. This requirement would then be covered under the operator defined maintenance practices utilized by the regulated community. These operator defined maintenance plans should be formal documentation that is fully enforceable under the final rule by the EPA as well as state regulatory agencies. It should also be noted that operator defined maintenance plans are the current strategy employed by the New Source Performance Standards, 40CFR60, Subpart JJJJ. As such, since this aspect of compliance has been deemed appropriate for new sources, it should also be deemed appropriate for existing sources.

The GCA believes that the above listed alternatives would better benefit the environment by ensuring the regulated engines are being optimally operated for reduced HAP emissions while not requiring excess preventative maintenance trips to the various field locations resulting in excess waste oil and waste oil filters as well as vehicle tail pipe emissions.

Maintenance Practice Constituents

As previously mentioned, it is unclear to the GCA as the effect on emissions oil changes and belt/hose checks would have above what is required by the manufacturer's recommendations. This said, the GCA fully concurs with the EPA that certain levels of maintenance practices ensure optimal emissions from stationary spark ignited internal combustion engines, thus reduce HAP emissions. As such, the GCA formally requests that the EPA consider the various manufacturer's recommended maintenance practices in order to best determine the proper frequencies and or methods to obtain optimum engine emission reductions.

Recommended Table 2b

For each	You must meet the following emission or operating limitation at all times, except during periods of startup, or malfunction.	You must meet the following emission or operating limitation during periods of startup, or malfunction.
1. Non-Emergency 2SLB 50≥HP≤249	a. Operate and maintain the stationary RICE according to the manufacturer's emission-related operation and maintenance instructions; or b. Develop and follow your own maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions.	i. Operate and maintain the stationary RICE according to the manufacturer's emission-related operation and maintenance instructions; or ii. Develop and follow your own maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions.
3. Non-Emergency 4SLB 50≥HP≤249	a. Operate and maintain the stationary RICE according to the manufacturer's emission-related operation and maintenance instructions; or b. Develop and follow your own maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions.	i. Operate and maintain the stationary RICE according to the manufacturer's emission-related operation and maintenance instructions; or ii. Develop and follow your own maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions.
10. <50 HP	a. Operate and maintain the stationary RICE according to the manufacturer's emission-related operation and maintenance instructions; or b. Develop and follow your own maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions.	i. Operate and maintain the stationary RICE according to the manufacturer's emission-related operation and maintenance instructions; or ii. Develop and follow your own maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions.

Miscellaneous Comments

- There is an obvious lack of data available for determining an appropriate MACT floor. The EPA has made broad assumptions to "fit" the data to the different sizes and types of engines in an attempt to create an MACT floor for all engines where no data exists. This is contrary to the intent of the Clean Air Act. The engines in the database are only representative of the downstream sector of the natural gas industry and bear little relevance to the upstream and midstream sectors particularly with smaller 4SRB and 2SLB engines. Several member companies of the GCA have indicated a willingness to work with the EPA to provide additional data that more accurately represents engines used in the upstream and midstream sectors. This lack of data also has an effect on the assumptions used for SSM.
- The phrase "Owners and Operators" needs to be better defined as it relates to the requirements. In this proposal, as with the NSPS regulations (40CFR60 Subpart JJJJ), all of the requirements are the responsibility of "Owners and Operators". While convenient for the EPA to avoid distinguishing between the two, the reality is that there are tens of thousands of engines where the roles of owner and operator are often represented by two independent companies. In the case of a rental compressor, the engine is owned by the lessor and rented to the lessee. The lessor typically (but not always) provides:
    - Maintenance including preventative maintenance, repairs, and overhauls. This would include maintenance plans and the documentation of the work performed.
    - Adjustment of the engine parameters that control combustion such as ignition timing, air/fuel ratios, etc...

  The lessee is typically (but not always) responsible for:
    - the day to day operation of the engine including starting, stopping, loading and unloading.
    - Emissions testing
    - Environmental permitting with the RICE along with the rest of surface equipment including burners, tanks, fugitive emissions etc...

  The EPA was asked to clarify the roles and responsibilities of Owner and Operator as it relates to the NSPS (40CFR60 Subpart JJJJ) rule, but has yet to do so. The same mistake should not be made on this proposed rule. The effects of this ambiguity include doubling or tripling the manpower required for tracking compliance on engines and for record keeping. All data has to not only be gathered, compiled, sorted and stored but in order to transfer to counter parties (from Owner to Operator, for example) the data must then be carved out according to rental relationships and then conveyed to the other party. There is also an increased chance of non-compliance from each entity believing the other entity has complied with certain provisions. Traditional definitions of owner and operator relied on a boundary of a facility and the state permitting structure is still based on that concept. However, these definitions are no longer adequate because each RICE is treated as a separate facility under NESHAP and NSPS. There can and will be many instances where there are multiple "owners and operators" for the same RICE.

For example, a natural gas production company constructs and operates a compressor station with 3 compressors driven by natural gas fueled RICE, each leased from a different rental company. This facility could be either a major source or minor source of HAP's and would include other sources of emissions in addition to the RICE. There will be 4 "owners and operators" at the site, namely the company that operates the facility and each of the 3 rental companies. The "site" owner and operator will hold the state air permit for the site but is dependent on each of the other rental companies for compliance on items such as maintenance plans. The rental companies are dependent upon the site owner and operator for items such as permitting and testing. What happens when an annual emissions test is missed or failed? Who is responsible? If one company chooses not to comply, is the other company required to perform those functions, if it is even practical? The EPA should acknowledge that there are over 15,000 engines that have these issues every day due to its actions and inactions.

- The rule states that SSM records need to be kept for 5 years even if the facility is relocated or sold. In the case of rental equipment, the owner (lessor) typically has some records such as maintenance logs and the operator (the lessee) has other records such as operational logs and testing results. When the engine driven package (the facility) is returned to the lessor, the records are rarely transferred to the lessor, yet the compliance period for the lessor as "Owner" has not ended. Also, the next lessee takes over as partial "Owner and Operator" with incomplete history. Since the requirements follow the RICE (for example performance testing frequencies), all of the parties are dependent on each other for historical records. The EPA should consider these dynamics when finalizing the rule.
- The proposed rule states that records must be kept on site unless waiver is obtained. The EPA and the states who will ultimately enforce the rule do not have sufficient manpower to provide the thousands of waivers that will be requested and re-requested every time the engine is relocated. A provision for keeping records at a field office should be written into the rule from the beginning. It is unnecessary burden to write rule requiring special waivers on items that are not only common place, but also the norm.
- The requirements for all of the different rules (Original subpart ZZZZ, JJJJ, and now revised ZZZZ) are overly burdensome. The EPA should consider having standards for Area sources that are consistent for all rules. New sources already have this standard, but existing sources are treated differently under this proposal. Specific surrogate's for HAP's are not needed for Area sources if an overall level of performance can be demonstrated by the engine. If the costs for controls for rural area sources can be justified, then surrogates for the existing engines should be the same as for new sources. For example, if an existing rich burn engine is operating at new source standards (2.0 gm/hp Nox, 4 gm/hp CO and 1.0 gm/hp of VOC's) then the NSCR can be considered to be functioning correctly and HAP's will be reduced even though Formaldehyde is not measured directly.
- The EPA should incorporate a provision for a commissioning period into the rule whereby the RICE is allowed to operate prior to installation of catalytic elements. This will prevent damage to the catalytic elements during engine break in. The EPA has stated, *"EPA understands the "commissioning period" to be the final phase of the construction process. Activities conducted during the commissioning period include: checking all mechanical, electrical, and control systems for the RICE and all related equipment; and confirming the performance measures specified in*

the purchase agreement. EPA understands that the commissioning period may take up to two weeks to complete. EPA does not consider the "commissioning period" as the initial startup of the unit as long as the RICE is not being used for its intended purpose or any other beneficial use at the facility during this time. Site-specific determinations of initial startup may be required for facilities that operate in a commissioning mode for excessive periods of time".[v] In the natural gas compression industry, it is extremely rare that an engine can be operated under load to facilitate the commissioning without being used for its intended purpose. The requirement for a site specific waiver is not an appropriate solution when it is a normal requirement. The waiver should be written into the rule.

The GCA wishes to thank the EPA for the opportunity to make the preceding comments and for its thoughtful consideration of the same. If you have any questions regarding this submittal please contact the GCA via our management company (NACM) at 972-518-0019 or John Dutton, HSE Committee Chairman, at 972-233-8191.

Sincerely,

John Dutton

John Dutton
HSE Committee Chairman, Gas Compressor Association

Cc: (by email) Melanie King, Energy Strategies Group, Sector Policies and Programs Division (D243-01), U.S. EPA, Research Triangle Park, NC 27711 (king.melanie@epa.gov)

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[i] References to EPA's costs are based on Regulatory Impact Analysis (RIA) for Existing Stationary Reciprocating Internal Combustion Engines (RICE) NESHAP dated February 2008 and the memo dated April 28, 2006 from Bradley Nelson, Alpha-Gamma Technologies, Inc to Jaime Pagan, EPA regarding Control Costs for RICE at Major and Area sources

[ii] EPA cost based on $19.7*HP+$1,799 where HP = engine size in horsepower.

[iii] $30 to $90 per horsepower per day based upon lost natural gas production at $6.00 per mmbtu. Cost varies depending on the number of stages and ratios of compression. Contact GCA for more details.

[iv] $6.00 per MMbtu natural gas with 5% increase in fuel burn assumed on 50% of GCA fleet.

[v] U.S. EPA Memo dated September 30, 2005 form Michael S. Alushin to Regional Air Compliance Branch Chiefs regarding National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE) – Questions and Answers

Attachment "A"

Manufacturer's Recommendations for Maintenance

AJAX

SI RICE Engines fueled by Natural Gas

From: Bill Bicknell [bicknell@CFANET.COM]
Sent: Friday, April 24, 2009 4:27 PM
To: Jantzen, Kyle; John Dutton
Cc: 'Chrisman, Bruce'
Subject: Ajax engine maintenance intervals

Kyle, John,
We can make the following statements to support the extended maintenance intervals on the Ajax engines. Does this meet your requirements?

Oil Change Interval: The oil change interval for Ajax engines has been established as once a year (8760 hours). The key feature that allows this long change interval is the crosshead design whereby the power cylinder is separated from the crankcase and uses a sealed piston rod for the mechanical connection. Therefore, no combustion blowby products get into the crankcase to contaminate the oil.

Spark Plug Change Interval: Since 1997, all Ajax engines having 2-spark plugs per cylinder have used the Stitt SR-107-2 spark plug in the prechamber and S-79-2 plug in the main chamber, which have demonstrated nominal plug life of 4000 hours for the prechamber plug and 8000 hours for the main chamber plug. These long spark plug change intervals are achieved due to the low 6.1 to 1 compression ratio and low rated BMEP for the Ajax power cylinder.

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Cummins

SI RICE Engines fueled by Natural Gas

View Related Topic

Maintenance Schedule (102-002)

General Information

Industrial Applications

All maintenance procedures listed for previous intervals **must** also be performed.

For convenience, listed below are the section numbers that contain specific instructions for performing the maintenance.

Maintenance Procedures at Daily Interval Section 3

- Lubricating Oil Level - check
- Engine Governor Oil Level - check
- Engine Coolant Level - check
- Aftercooler Coolant Level - check
- Engine Crankcase Breather Tube - check
- Fan, Cooling - check
- Drive Belts - check
- Governor Oil - check

Maintenance Procedures at 250 Hours, or 3 Months Section 4

- Lubricating Oil and Filters [3] - change
- Intake System Piping - check
- Air Cleaner Restriction - check
- Overhead Set [1] - adjust
- Oxygen Setting - check

Maintenance Procedures at 750 Hours, or 6 Months Section 5

- Supplemental Coolant Additives (SCA) and Antifreeze [2] - check
- Fan Belt Tensioner - check
- Spark Plugs - check
- Lubricating Oil and Filters [4] - change

Maintenance Procedures at 1500 Hours, or 1 Year Section 6

- Engine Hoses - check
- Engine Mounts - check
- Batteries - check
- Battery Cables and Connections - check
- Auxiliary Water Pump - check
- Spark Plug Wires - check
- Engine Assembly - clean
- Gas Filter - replace
- Coolant Filter - replace
- Overhead Set - adjust
- Engine Timing - check
- Gas Pressure to Air - Fuel Mixer - check
- Air Cleaner - replace
- Ignition Coils - check
- Ignition Couplings - check
- Throttle Linkages and Ball Joints - check
- Governor Oil - change

Maintenance Procedures at 6000 Hours, or 2 Years Section 7

- Couplings, Ignition Drive - replace
- Engine Water Pump - check
- Water Pump Idler Assembly - check
- Fan Hub - check
- Vibration Damper - check
- Turbocharger - check
- Engine Coolant - replace
- Drive Belt, Cooling Fan - check
- Drive Belt, Aftercooler - check

1. Adjust the valves at the first oil change period of 250 operating hours, and then at the interval of every 1500 hours or 1 year, whichever comes first.
2. Check the coolant additive concentration every 6 months unless the concentration is over 3.0 units. Then, check at every oil change interval until the concentration is below 3.0 units.
3. Low capacity oil pan applications **only**. See the chart at the end of this schedule.
4. High capacity oil pan applications **only**. See the chart at the end of this schedule.

Power Generation

All maintenance procedures listed for previous intervals **must** also be performed.

For convenience, listed below are the section numbers that contain specific instructions for performing the maintenance.

Maintenance Procedures at Daily Interval Section 3

- Lubricating Oil Level - check
- Engine Governor Oil Level - check

- Engine Coolant Level - check
- Aftercooler Coolant Level - check
- Engine Crankcase Breather Tube - check
- Fan, Cooling - check
- Drive Belts - check
- Governor Oil - check

Maintenance Procedures at 250 Hours, or 1 Year Section 4

- Lubricating Oil and Filters [3] - change
- Intake System Piping - check
- Air Cleaner Restriction - check
- Overhead Set [1] - adjust
- Oxygen Setting - check

Maintenance Procedures at 750 Hours, or 1 Year Section 5

- Supplemental Coolant Additives (SCA) and Antifreeze [2] - check
- Fan Belt Tensioner - check
- Spark Plugs - check
- Lubricating Oil and Filters [4] - change

Maintenance Procedures at 1500 Hours, or 1 Year Section 6

- Engine Hoses - check
- Engine Mounts - check
- Batteries - check
- Battery Cables and Connections - check
- Auxiliary Water Pump - check
- Coolant Heater - check
- Spark Plug Wires - check
- Engine Assembly - clean
- Gas Filter - replace
- Coolant Filter - replace
- Overhead Set - adjust
- Engine Timing - check
- Gas Pressure to Air - Fuel Mixer - check
- Air Cleaner - replace
- Ignition Coils - check
- Ignition Couplings - check
- Throttle Linkages and Ball Joints - check
- Governor Oil - change

Maintenance Procedures at 6000 Hours, or 2 Years Section 7

- Couplings, Ignition Drive - replace
- Engine Water Pump - check
- Water Pump Idler Assembly - check

- Fan Hub - check
- Vibration Damper - check
- Turbocharger - check
- Engine Coolant - replace
- Drive Belt, Cooling Fan - check
- Drive Belt, Aftercooler - check

1. Adjust the valves at the first oil change period of 250 operating hours, and then at the interval of every 1500 hours or 1 year, whichever comes first.
2. Check the coolant additive concentration every 6 months unless the concentration is over 3.0 units. Then, check at every oil change interval until the concentration is below 3.0 units.
3. Low capacity oil pan applications **only**. See the chart at the end of this schedule.
4. High capacity oil pan applications **only**. See the chart at the end of this schedule.

Gas Compression

All maintenance procedures listed for previous intervals **must** also be performed.

For convenience, listed below are the section numbers that contain specific instructions for performing the maintenance.

Maintenance Procedures at Daily Interval Section 3

- Lubricating Oil Level - check
- Engine Governor Oil Level - check
- Engine Coolant Level - check
- Aftercooler Coolant Level - check
- Engine Crankcase Breather Tube - check
- Fan, Cooling - check
- Drive Belts - check
- Air Cleaner Restriction - check
- Governor Oil - check

Maintenance Procedures at 250 Hours, or 3 Months Section 4

- Lubricating Oil and Filters [3] - change
- Intake System Piping - check
- Overhead Set [1] - adjust
- Oxygen Setting - check

Maintenance Procedures at 750 Hours, or 6 Months Section 5

- Supplemental Coolant Additives (SCA) and Antifreeze [2] - check
- Fan Belt Tensioner - check
- Spark Plugs - check
- Lubricating Oil and Filters [4] - change