舶用小型補助ボイラ用ガンタイプバーナ「VJ 型」のお取扱について

２０１０年４月

本船の補助ボイラに装備されております弊社の圧力噴霧式 VJ 型バーナにて最近起こった事故について本書にてお伝えいたします。
ユーザー様におかれましては、以前お送りし、また今回再度添付いたします注意事項書を守っていただくことの重要性を思い出していただきたいと切に願っております。

1. 事故の概要

2008 年 11 月 18 日に補助ボイラに装備されている VJ タイプバーナにおいてフラッシュバック事故が発生し、乗組員がやけどを追いました。詳細につきましてはオーストラリア運輸交通安全局（ATSB）から発行されておりますレポートをご覧下さい。

http://www.atsb.gov.au/publications/investigation_reports/2008/mair/258-mo-2008-010.aspx

2. 事故の原因

点火失敗の原因を究明することなく、何度も点火を試み、失敗を繰り返したことより炉底に未燃油が蓄積し、爆発性のガスが充満していったものと思われます。斯様な状況でフラッシュバック事故の原因となりました。
（これに関する警告は私たちの注意事項書に明確に記述されております。）

3. 安全上の推奨事項

1) 弊社が以前お送りし、また今回再度添付致します注意事項書はボイラーを取り扱うクルーに手渡され、十分に読むよう指導されているべきものである、という事をご確認頂きたいと思います。要すれば安全な運転の為に、乗組員に必要な教育を実施する事を配慮願いたいと思います。
2) 取り扱いやメンテナンスは注意事項書を忠実に守って頂くことを強く思い出して頂きたく思います。もしそれが守られなければ、乗組員が ATSB レポートにあるような事故と同じ危険にさらされる事になります。

4. 安全上の推奨事項

ATSB のレポートにしたがい、下記の通りアドバイス致します。

我々にはたくさんのバーナがあり、その内の一つが直接着火方式のバーナで VJ 型と呼ばれており、また他のタイプのパイロットバーナが付いた油圧バーナがあり VJP 型と呼ばれています。もし、パイロットが付いたバーナをお望みであれば、既存のバーナは VJP 型バーナへ換装できる、または改造できると言うことをアドバイス致します。もし改造に掛かる費用が如何ほどか、この二つのバーナの違いはどういうものか知りたい場合は喜んで必要な情報を提供致します。

上記の内容につきましては下記をクリックしてください。

1. ATSB TRANSPORT SAFETY INVESTIGATION REPORT
   Marine Occurrence Investigation Report No.258 Final
   (http://www.atsb.gov.au/publications/investigation_reports/2008/mair/258-mo-2008-010.aspx)
2. SAFETY PRECAUSIONS
3. WARNING PLATES (2sheets)

ご不明な点は弊社までお問い合わせ下さい。

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SAFETY PRECAUTIONS

1. Before handling this equipment, be sure to read this instruction manual for familiarizing yourselves with the principle to operate or maintain the whole of the equipment.

   Operate and maintain the equipment carefully. Otherwise incorrect handling which may lead to such critical accidents incident as explosions, flashbacks etc.

2. To specify the degree of injury and danger, the following cautionary instructions are classified into three degrees of urgency, namely, "DANGER", "WARNING" and "CAUTION". This is intended for the safe and proper use of products for the prevention of injury and damage to yourselves and other persons. These cautionary instructions together with other safety rules should always be followed since they cover important contents on safety.

⚠ DANGER	This sign indicates such an imminently hazardous situation as will result in user's death or serious injury, if incorrectly handled.
⚠ WARNING	This sign indicates the case where such a possibility as could result in user's death or serious injury is presumable, if incorrectly handled.
⚠ CAUTION	This sign indicates the case where such a possibility as may result in user's injury or occurrence of only material damage is presumable, if incorrectly handled

It should be noted that even such cases as will correspond to ⚠ CAUTION may lead to critical accidents depending upon the circumstances. Therefore, be sure to follow the instructions.

⚠ WARNING

3. IN THE EVENT OF IGNITION FAILURE AT BURNER START:

Adhere to the burner instruction manual of the following guidance.

The burner is automatically shutdown with the furnace purging for 60 seconds in each

ignition failure. The F.D fan is stopped and the burner servicing becomes ready.

*Never use manual switches to relight the burner. and

*Never attempt to relight the burner in each ignition failure BEFORE looking into and eliminating the cause as mentioned below :

1) Clean the ignition electrode and check for possible wear, oxide film, cracks, etc
2) Check the temperature of fuel if it is risen up to the specified level.
3) Check the atomizer and fuel pipe for possible clogging.
4) Check the damper plate position if it is fully closed for start up.
5) Clean the flame eye element, check for the flame eye activation by a lamp light. If not, check further for the wiring and relays activation.

Upon completion of the mending work mentioned on the above, relight burner with the reset bottom. As above never use manual switches to relight the burner because the burner shut down function against unsuccessful relighting does not work in the manual mode.

This manner of operation is intended to prevent the unsuccessful attempts to relight the burner that allows unburned fuel to accumulate until an explosive vapor is present in the boiler furnace. It becomes the root case of explosions or flashbacks which may cause a danger of injury to servicing personnel.

⚠ WARNING

4. IN THE EVENT THAT AN ACCUMULATION OF EXPLOSIVE VAPOR BE SUSPECTED UNDER the circumstance of :

Should the accidentally repeated attempts to relight the burner by manual switches and or the reset button be made or should the leakage of fuel from its connection pipe and the FO magnetic valve to the boiler furnace be suspected, it is already an entire hazardous condition to which the following emergency steps must be taken to protect yourself against a danger of injury.

1) Never open the maintenance cover until a thorough air purging has been

completed, otherwise opening of the maintenance cover may lead to flashback. The resultant hot gas blast may cause a danger of burns.

2) Observe at once the funnel exhaust.

Should vapor smoke as white smoke be observed, regard this state that there is a significant amount of the accumulation of fuel vapor that present a high explosion potential.

3) Proceed the purging until no vapor smoking is observed.

Then put the fan in a standstill for a period of 10 minutes or more and start manual purging again for a while for confirming no further build up of vaporization in the boiler furnace with no observation of white smoke.

4) Although it would require a lengthy purging time, with a special preparation of the engine room plants operations, the highest priority should be given to the recovery of safe condition by a through purging of the boiler furnace by which the servicing personnel can be relieved from the risk of a boiler flashback and the danger of injury.

⚠ WARNING

5. INSPECTION & MAINTENACE WORK

1) Maintenance personnel should wear leather gloves, long-sleeved working clothes, safety glasses to prevent getting burned and eye injury from the heated pressurized gas and flying particles.

2) Check if igniters are sparking properly. Improper sparking may lead to an ignition failure.

3) Check if there are any oil leakage from fuel pipeline joints and the fuel oil magnetic valve. Otherwise fuel oil dripping into the furnace may lead to cause explosions flashbacks.

4) Check the state of combustion and smoke generation from the funnel periodically. Improper combustion will cause unburned fuel oil to scatter inside the furnace and

accumulate on the furnace bottom, leading to a cause of backfire.

5) Carry out maintenance and inspection work of stabilizer, atomizer and igniter once a week. Continued operation of them in as-stained condition may lead to occurrence of poor combustion and ignition failure..

⚠ CAUTION

6) In conducting maintenance and service work, do not take off the maintenance cover while F.D. fan is running (in the state where wind pressure is built up inside the casing).If the maintenance cover is taken off while F.D. fan is running, there is a danger of the maintenance cover being blown off.

Except for the case where the fan is allowed to run in the state of the maintenance cover being taken off for inspection purpose, be sure to stop the fan when remounting the maintenance cover.

⚠ WARNING

7. CAUTIONALY INSTRUCTIONS FOR MANUAL SWITCHES OPERATION

1) Manual operation switches are provided for only the cold start of the boiler plant when the boiler is commissioned in use during ship building and docking.

Do not use the switches in the ordinary burner operation except for checking of a failure of activation of the system components such as the electric motor and for an emergency operation.

2) At this burner start by manual switches operation, if the burner fails to ignite within 10 seconds after opening the fuel shut-off valve, then set the fuel shut-off valve operation switch to AUTO side to close the valve forthwith. Never attempt lighting repeatedly for the reason of unsuccessful burner ignition.

And carry out the pre-purge before ignition and post-purge after extinction sufficiently (usually for a period of 60 seconds or more).

Otherwise the atomized fuel oil filled up inside the furnace may lead to a danger of

explosions, flashbacks.

4) As the trip function due to flame failure, boiler water level and etc does not work in the manual switching mode, the operator should attend to the boiler front without leaving the spot where he can make an immediate shut down the burner in cases of abnormalities.

5) In case of sequencer failure, contact the maker forthwith for rectifying problems.

In such cases, automatic operation is obviously impracticable but the burner can be operated by manual switches operation as an emergency measure. However, it should be noted that there is a possibility to cause a critical accident such as explosions, flashbacks, dry run or the like, if inadvertent handling be made.

In this emergency operation, as the damper is not automatically put in open position after light up of the burner, upon checking the state of combustion, put the manual operation switch in AUTO position forthwith to put the damper in the state of open position.

⚠ WARNING

Adhere to the following guidance.

1. IN THE EVENT OF IGNITION FAILURE AT BURNER START :

   *Never use manual switches to relight the burner. and

   *Never attempt to relight the burner in each ignition failure BEFORE looking into and eliminating the cause as mentioned below :

   1) Clean the ignition electrode and check for possible wear, oxide film, cracks, etc
   2) Check the temperature of fuel if it is risen up to the specified level.
   3) Check the atomizer and fuel pipe for possible clogging.
   4) Check the damper plate position if it is fully closed for start up.
   5) Clean the flame eye element, check for the flame eye activation by a lamp light. If not, check further for the wiring and relays activation.

   Upon completion of the mending work mentioned on the above, relight the burner with the reset button.

2. IN THE EVENT THAT AN ACCUMULATION OF EXPLOSIVE VAPOR BE SUSPECTED UNDER the circumstance of :

   Should the accidentally repeated attempts to relight the burner by manual switches and / or the reset button be made or should the leakage of fuel from its connection pipe and the FO magnetic valve to the boiler furnace be suspected,

   1) Never open the maintenance cover until a thorough air purging has been completed, otherwise opening of the maintenance cover may lead to flashback. The resultant hot gas blast may cause a danger of burns.
   2) Observe at once the funnel exhaust.
      Should vapor smoke as white smoke be observed, proceed the purging until no vapor smoking is observed.
   3) Then put the fan in a standstill for a period of 10 minutes or more and start manual purging again for a while for confirming no further build up of vaporization in the boiler furnace with no observation of white smoke.
   4) Although it would require a lengthy purging time, with a special preparation of the engine room plants operations, the highest priority should be given to the recovery of safe condition by a thorough purging of the boiler furnace.

3. ON SERVICING WORK

   1) Servicing personnel should wear leather gloves, long-sleeved working clothes, safety glasses to prevent getting burned and eye injury from the heated pressurized gas and flying particles.
   2) Check if there are any oil leaks from each joint of fuel pipeline and fuel solenoid valve, otherwise, fuel oil dripping into the furnace may lead to a hazardous gas accumulation.

⚠ WARNING

In the event that an accumulation of explosive vapor be suspected, never open this cover until a thorough air purging has been completed.

Otherwise you may get injured in a possible FLASH BACK.

Follow the description in the “WARNING” plate on the control panel.