

(TRANSLATION)

February 2014

To whom it may concern,

NOHMI BOSAI LTD.

**Affection of Discharge Sound of Gas Fire Suppression System on Precision Instruments
(Hard Disk Drives and Others) and Countermeasures**

The paper entitled "Study of the affection of the sound environment on precision instruments" was presented during the Annual Meeting of the Architectural Institute of Japan held on September 11, 2010. This paper suggests that the sound environment (particularly, sound pressure when gas is discharged) may likely affect a hard disc drive ("HDD").

As this phenomenon is a problem which is beyond expectation and based on newly discovered knowledge, it does not impair gas fire suppression systems' compliance with administrative requirements. However, we think that this phenomenon should be considered as one of the factors to be reviewed at the design stage, along with fire suppression performance, life safety, preservation of customers' property and environment together with those concerned (customers, building contractors, facility managers and the like) on each occasion.

Please review our proposed countermeasures stated below if you think that a countermeasure against the above-mentioned gas discharge sound is required in your facilities.

1. Summary of the paper* presented during the Annual Meeting of the Architectural Institute of Japan

(1) A sound pressure of 110 dB (not equal to the sound pressure at the HDD location) has caused a change in the data transfer rate of a HDD under the test conditions of the simulation test equipment.

(2) The sound pressure level of N2 gas fire suppression systems exceeds 130 dB at a maximum.

For details, please refer to the papers "Study on the affection of the sound environment on precision Instruments (Part 1, Part 2 and Part 3)" (Doc. Numbers: 40126, 40127 and 40128)

【Available from the websites of the National Institute of Informatics (only in Japanese),

Downloading: Not free of charge】

: <http://ci.nii.ac.jp/naid/110008114240>, <http://ci.nii.ac.jp/naid/110008114241>,

<http://ci.nii.ac.jp/naid/110008114242>

【Available from the websites of NOHMI BOSAI LTD. (only in Japanese), Browsing: Available,

Printout: Not available】

: <http://www.nohmi.co.jp/product/nn100/ronbun.pdf>

2. Proposed Countermeasures

- (1) Sound insulation and vibration isolation for a HDD housing rack (Use of acoustic absorption materials and vibration-proof materials, etc.)
- (2) Measures to protect a HDD before starting gas agent discharge (HDD stop, evacuation of magnetic head, etc.)
- (3) Improvement in sound-proofing of a HDD itself and/or data protection (backup of data, etc.)
- (4) Reduction of gas discharge sound
- (5) Others

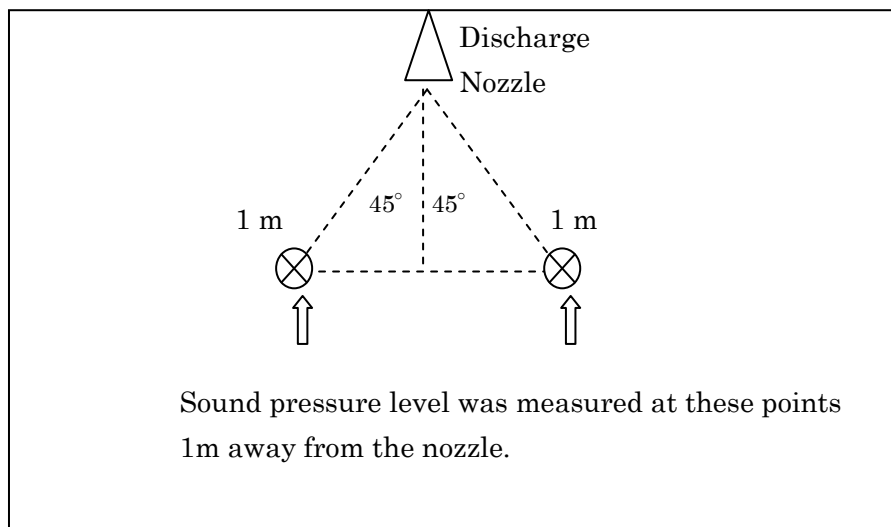
With regard to “countermeasure (4) (Reduction of gas discharge sound)” above, Nohmi Bosai Ltd. (“NOHMI”) can supply new sound reduction type gas discharge nozzles for Nitrogen (N2) gas suppression system and Halon 1301 gas suppression system (Manufacturer: Koatsu Co., Ltd.).

The performance of the new sound reduction type nozzles is as shown in the table below.

Type of Sound Reduction Nozzles		Flow Rate of Nozzles	Sound Pressure Level (Frequency: up to 100kHz) * 2
For Nitrogen gas suppression system	Ceiling mounting type	90 m ³ /min	97dB
	Side wall mounting type * 1	90 m ³ /min	99dB
For Halon 1301 gas suppression system	Ceiling mounting type	5kg/sec	96dB
	Side wall mounting type * 1	7kg/sec	98dB

* Remark 1 : The above indicated nozzles are typical ones, and other nozzles having different flow rates are also available.

* Remark 2





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Please note that our new sound reduction type gas discharge nozzles are intended for reducing the affection of the gas discharge sound on a HDD by reducing the gas discharge sound and NOHMI does not guarantee the performance of the HDDs. In addition, even if a customer replaces the existing nozzles with the sound reduction type as in the above countermeasure (4) and adopts all or a part of the above countermeasures other than (4), NOHMI does not guarantee the performance of the HDDs.

Further note that as the gas fire suppression systems other than N2 and Halon 1301 gas fire suppression systems would make a loud gas discharge sound, it is expected that precision instruments, such as an HDD, would suffer certain affection therefrom.

3. Others

The papers in the above paragraph 1 are available only in Japanese. As similar information is also available in the website of Bvfa (Bundesverband Technischer Brandschutz e.V.), please refer to them.

In addition, NFPA75 "Protection of Information Technology Equipment" states that power supply to all the electronic devices should be cut off at the same time when the gas fire suppression system starts discharging the gas agent.

If you have any questions regarding this guidance, please contact international division, NOHMI BOSAI LTD. (PHONE: (81)3-3265-0231 E-MAIL: kouhou@nohmi.co.jp)