Lloyd's Register

Office: **Rotterdam**

Date: **25 November 2013**

This certificate is issued to DIAC (Dependable Industrial Automation Consultancy B.V.) in order to certify that the undersigned Surveyor has carried out on DIAC's request a review of report no: DIAC-DUXVLV-2013-011-R2-SILCERT_DCV_CEFG, November 2013, dealing with Safety Integrity Level, SIL Classification assessment of the following products:

- **Duxvalves DCV Series C body sizes 0.5"-6", classes ASME #150#-#2500, API#2000-#15000, DCV Series E body sizes 0.5"-6", classes ASME #150#-#2500, API#2000-#15000 DCV Series G body sizes 0.5"-6", classes ASME #150#-#2500, API#2000-#15000 DCV Series F body sizes 0.5"-1", classes ASME #150#-#2500 and are classified per IEC 61508 as type A equipment**

In order to assess compliance with IEC 61508 a performance assessment has been carried out by Dependable Industrial Automation Consultancy B.V. (DIAC) of the Duxvalves DCV Series C, E, F and G. This assessment reviews the SIL's up to which the Duxvalves DCV series C, E, F and G models within the scope of this assessment can realistic be applied in safety related applications.

The review was based on verifying the compliance with IEC 61508 with regard to the following aspects:

- **method used**
- **consistency throughout the report**
- **clearness of communication evidence**
- **justification of evidence & source references**

The IEC 61508's first premises is that there is equipment intended to provide a function, there is a system which controls it, and between them they pose a risk. The standard's second premises is that " safety functions" are to be provided to reduce the risk posed by the " Equipment Under Control " (EUC) and it's control system.
Any system which is designated to implement the required safety functions necessary to achieve a safe state for the EUC and which are intended to achieve the necessary safety integrity for the required safety function are classified as safety related systems.

Safety integrity is defined as the likelihood of a safety related system satisfactorily performing the required safety functions under all stated conditions, within a stated period of time and a Safety Integrity Level (SIL) as a discrete level for specifying the safety integrity requirements of the safety functions.

We hereby confirm that the above is reflected in the DIAC report no. DIAC_DUXVLV-2013-011-R2-SILCERT_DCV_CEFG, November 2013 as a result of the method applied, demonstrated consistency, clearness of communicated evidence and the justification of evidence and source references.

Results are such that the Duxvalves DCV Series C, E, F and G models is confirmed to be IEC61508 systematic capable to perform at (SC3) SIL-3 in a Single actuated valve configuration and is confirmed to be capable to perform at (SC4) SIL-4 in a Double configuration taking into account conservative faliure data at a half year Proof Test Interval Time for class Naval Unsheltered (Unclean) Severe Duty services (one year using selected proven in use high performance associated components and Safety Assessment Reliability of the Safety Instrumented System (SIS) design).

Recommendation: 1) It is strongly recommended to closely consult Duxvalves B.V. to finalise issues with regard to installation, commissioning, operation, maintenance and safety-related proof testing or any other deployment relevant matter and utilise their knowledge and expertise for demanding applications.
2) It is recommended to udate this operational installed base assessment in approximately three years.

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