



# DET NORSKE VERITAS

## TYPE APPROVAL CERTIFICATE

**CERTIFICATE NO. E-8820**

This Certificate consists of 4 pages


*This is to certify that the*  
**Battery (Accumulator)**  
*with type designation(s)*  
**ANM**

*Manufactured by*  
**SAFT AB**  
OSKARSHAMN, Sweden

*is found to comply with*  
Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det  
Norske Veritas' Offshore Standards  
IEC 60092-305 (1980)  
IEC 60623(2001 - 09)  
IEC 62259 (2003 - 10)

*Application*  
Industrial Nickel-Cadmium batteries for mobile and stationary applications and for use in  
ships and Offshore Units

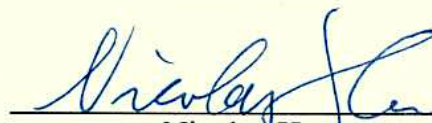
*Place and date*  
Høvik, 2007-12-28  
for DET NORSKE VERITAS AS

  
Marit Laumann  
Head of Section



*Local Office*  
DNV Stockholm

*This Certificate is valid until*  
2011-12-31

  
Nicolay Horn  
Surveyor

**Notice: This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.**

However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.



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File No.: 822.40

## Product description

Industrial pocket plate Ni-Cd batteries with the following type designation are covered by this certificate.

Type Designation	Rated Capacity C <sub>5</sub> Ah
ANM 8	8
ANM 16	16
ANM 24	24
ANM 32	32
ANM 40	40
ANM 48	48
ANM 71	71
ANM 95	95
ANM 119	119
ANM 142	142
ANM 166	166
ANM 190	190
ANM 238	238
ANM 285	285
ANM 357	357
ANM 426	426
ANM 476	476
ANM 570	570
ANM 600	600
ANM 710	710
ANM 850	850

## Application/Limitation

Installation and maintenance to be done in accordance with Installation and Operating Instructions and/or the Technical Manual.

## Type Approval documentation

Brochure for the Ultima Ultra Low Maintenance Batteries ANM Range.

Test report summary, dated 1999-06-21.

Test report details, ref. T97\_017.XLS, printed 1998-12-28.

Saft Nife Report T95-014, dated 1995-02-24.

Saft Technical Report 932, dated 2003-11-05.

Mechanical test report ref. 94F20909, SP-Swedish National testing and Research Institute, dated 1994-03-30.



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Saft report TR-1340, "Type testing according to IEC 62259, ed 1, of the cell programm SLM", dated 2005-11-01.

SP, Swedish National Testing and Research institute report no. P403427:A "Gas absorption efficiency test", dated 2004-10-14.

DNV "Statement of inspection status", issued 2004-09-23, 2004-11-22, 2005-04-21 & 2005-10-14.

## Tests carried out

Type tests in accordance with IEC 60623 (Fourth edition 2001 - 09):

item 4.2 - Discharge performance

- sub-clauses
- 4.2.1 - Discharge performance at 20°C
- 4.2.3 - Discharge performance at - 18°C
- 4.2.4 - High rate current test

item 4.3 - Charge retention

item 4.4 - Endurance

- sub-clauses
- 4.4.1 - Endurance in cycles

item 4.5 - Charge acceptance at constant voltage

item 4.8 - Electrolyte retention

- sub-clauses
- 4.8.1 - Test procedure
- 4.8.2 - Acceptance criteria

item 4.9 - Storage

Type tests in accordance with IEC 62259 (2003 - 10):

item 7.2.1 - Discharge performance at +20°C

item 7.2.2 - Discharge performance at +5°C

item 7.2.3 - Discharge performance at -18°C

item 7.2.4 - High rate current test

item 7.3 - Charge retention

item 7.4.1 - Endurance in cycles

item 7.4.2 - Permanent Charge endurance

item 7.5 - Charge acceptance at constant voltage

item 7.7 - Vent operation

item 7.8 - Electrolyte retention

item 7.9 - Determination of gas recombination efficiency

item 7.10 - Storage

Vibration test



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### **Marking of product**

The product to be marked in accordance with in IEC 62259: Manufacturers name, IEC 62259, type and manufacturing date.

### **Certificate retention survey**

The scope of the retention/renewal survey is to verify that the conditions stipulated for the Type approval is complied with and that no alterations are made to the product design or choice of materials.

The main elements of the survey are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Production Sample Tests (PST) and Routines (RT) checked (if not available tests according to PST and RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Survey to be performed at least every second year.

END OF CERTIFICATE