



WOLFGANG LEGIEN

PRESS TRIP EURONAVAL

DEMONSTRATES CAPABILITIES OF FRENCH NAVAL INDUSTRY

It was called Press trip EURONAVAL, everybody assumed it was a DCNS press trip as the invitations were extended by DCNS. But the CEO DCNS, Jean-Marie Poimboeuf, welcomed the group of 39 defence journalists at Villacoublay 107 Air Force Base as President GICAN (Groupement Industriel des Constructions et Armements Navals). And indeed the outstanding programme provided the mainstay of French naval industry with a unique opportunity to present their capabilities. The group was also welcomed by the Deputy Chief of Staff French Navy, Admiral Launay, and Jaques de Lajugie, International Development Director of France's Armaments Board, Délégation Générale pour l'Armement (DGA).

DEMANDING SCHEDULE

After the welcome on September 15th at Villacoublay, the group was flown by a French Air Force CASA CN 235 aircraft (see figure 2) to Toulon. That afternoon in Toulon we enjoyed an extensive visit of BPC "Tonnère" and TRIPARTITE minihunter "Verseau", the latter with TUS, ECA and SAFT presenting their participation in the upgrade programme. In the evening a cocktail reception was given at the impressive Marine Museum of Toulon.

The following morning of September 16th provided an outstanding insight into the Combat System Integration Centre at Toulon-Saint Mandrier (see figure 3), the shore integration facility which is indispensable for development and testing of the software and hardware working together in a replica of the HORIZON frigate masts and CIC, soon to be augmented by a replica of the FREMM frigate. From there the group was transferred by bus to THALES Underwater Systems (TUS) in Sophia-Antipolis for a presentation of what TUS has to offer, followed by demonstrations at the FREMM sonar integra-

tion platform, in the acoustics laboratory, and a presentation on Maritime Security. This was followed by presentations by Eurotorp, Saft, SNPE, and Lacroix. The group was then flown by 'our' CASA to Lorient, with check in at the hotel around 10:30 p.m., followed by a late night dinner.

The following morning of September 17th the group had the opportunity to visit the Raidco RPB 20 gendarmerie patrol boat and see a demonstration of the SIREHNA USV RODEUR benefitting from the company's unique ship dynamic control features. This was followed by a visit to the Corvettes and Frigates Centre of DCNS, with presentations on the FREMM and GOWIND programmes including technology transfer for export corvettes and frigates, and MBDA weapon systems on board. We then got a presentation of the 'Virtual Reality' workshop with 3D projection of ships and presentation of products, followed by the FREMM Production workshop. Unfortunately, the visit of "Chevalier Paul", the second HORIZON frigate moored pier side at DCNS, was cancelled as it was time to fly the group by CASA to Cherbourg.

Fig. 1: This will become "Aquitaine", the first French FREMM frigate under construction at DCNS in Lorient. The blocks on the right will be turned shortly by 90 degrees – this is done to minimise the effects of earth magnetism. (All photos w/ Mönch Archive, unless stated otherwise)

The final day, September 18th, featured a visit to the DCNS Frigate and Corvette Centre showing FREMM, FM400 and GOWIND, followed by the DCNS Submarine Centre, with presentations by DGA on the BARRACUDA SSN, "Le Terrible" SSBN, SCORPENE including MESMA, and ANDRASTA SSK SMX22, plus an outlook on SMX24 which will be revealed at EUROVAL to 'promote ideas'. It was much regretted that the Royal Malaysian Navy did not grant permission to visit their SCORPENE SSK and that no photos were allowed to be taken when we came as close as 50m to the "Tunku Abdul Rahman". DCNAVFCO followed with a description of the training the French Navy offers to foreign navies, including the Brest training centre with the SISMA simulator. The Submarine Tactical Integrated Combat Systems division of DCNS gave an overview of SUBTICS for new submarines or as a modernisation support solution, followed by MBDA presenting the SM 39 EXOCET, the submarine-launched Naval Cruise Missile (formerly SCALP Navale), and investigations by DCNS on MICA being submarine launched – a French would-be answer to IDAS.

After lunch with CMN in the Club Navale the group was given an overview of what *Constructions Mécaniques de Normandie (CMN)* has to offer, the COMBATTANTE, VIGILANTE and INTERCEPTOR lines, but with proud emphasis on the BR 72 for the UAE, with a visit on board the first BAYNUNAH under construction, as world leader for light corvettes with stealth technology expertise. The group then departed to Paris by train.

If there is one small critique I have to make about this outstanding trip it is that the organisers packed too much into too little time. Not that it mattered having to depart from the hotels at 7 o'clock in the morning. But the understandable aim to give all representatives of French naval industry an opportunity to present their capabilities resulted in a regrettable lack of time during Q&A, made good on the first evening thanks to the Cocktails at the Marine Museum in Toulon which offered better opportunities to make enquiries than at a seated dinner like on the following days – as enjoyable as they were.

HIGHLIGHTS OF THE VISIT

It is very difficult and necessarily subjective to pinpoint particular highlights, and impossible to reflect all presentations at the same length. My decision where to place emphasis is driven by personal expertise, background and interest. It is therefore necessary to point out that everybody involved gave his/her best to make this press trip a great success, and I apologise to those who only get a mere mentioning.

Admiral Launay pointed out the credibility of French deterrence, with units deployed all over the world, more than one SSBN on patrol permanently, the aircraft carrier recently four times in the Indian ocean in support of troops in Afghanistan and mine hunters in a life mine clearance operation in the Baltic, evacuation within TF 448 off Lebanon and fighting pirates within TF 150 off Somalia; engagement in anti-narcotics operations in the Caribbean. Jacques de Lajugie highlighted that export has become a priority for France, driven by the policy of President Sarkozy. And Jean Marie Poimboeuf explained GICAN with over 131 French companies under its roof and Maritime Security increasing in importance. GICAN gives the Navy the means to address the threats, industry is translating the White Paper into the next generation of naval defence with its components submarines, maritime air (even though PA2 is delayed), 18 frigates (11 FREMM, two HORIZON, five "La Fayette"). Way ahead: Industry needs continued support for R&D; needs to find other applications of naval defence means for civilian domains, and must work on improving European cooperation to keep the costs down as well as increase export to reduce costs for French



Fig. 2: Some felt as if we were flying to Afghanistan, and three hours from Nice to Lorient can indeed become a long trip, for others it was great fun and a first to fly Air Force, including the 'field meal' package.

Fig. 3: We did not only fly French Air Force, we also took to the sea with the French Navy: To shorten the time in the rush hour at 7 o'clock from Toulon Naval Base (new home of aircraft carrier FS "Charles de Gaulle" seen in the background) to the peninsular of Saint Mandrier, we took a naval motor launch, testing our sea legs.

Navy projects. In response to the question about the impact of reducing the target of 17 FREMM to 11 he clarified that this has to be seen in the context of ever increasing multi-national cooperation at sea as well as by taking into account that the 18 frigates are 'first rank' frigates. However, the French Navy is developing a concept for Coast Guard missions, for units with less than first rank capability. He concluded that there is no other shipyard that has 11 frigates ahead of itself – even though he would prefer to build 30. Regarding the delayed PA2 with possible consequences on its price tag, he responded that cooperation with the UK was very real, with the French Navy making a big effort to accept the UK design 'as is' but never received an answer from the UK. Finally on a possible JV with Chantier de l'Atlantique as suggested by President Sarkozy: This may be necessary because it is increasingly difficult to get the skilled young people in the numbers needed. When probed further on the Coast Guard type fleet of lesser capabilities he explained that this is a concept discussed in Brussels, which will have to take into account that organisations and legislations are different in the various countries.

The visit of FS "Tonnerre" was a very welcome opportunity to see the impressive ship complete, having been explained the tricky joining procedure of the blocks we walked through in June 2005. The hangar area flexibility (see figure 4) and the accommodation standard flexibility needs pointing out, with plenty of space for embarked HQ staffs which will have to bring

Fig. 4: This partial view gives an impression of the size and flexibility of the hangar of FS "Tonnerre" which could e.g. be transformed into a field hospital – equally convincing as the versatile well deck of "Tonnerre" with direct access to the car deck.



Fig. 5: It was a surprise to see how small ECA's K-ster mine destruction vehicle is, featuring the unique tilt-able head. K-ster was displayed as part of the TRIPARTITE Upgrade outside FS "Verseau".

their computers though to plug into the redundant bus system. *Constructions Industrielles de la Méditerranée (CNIM)* presented their unique catamaran landing craft with a max. speed of 27 knots empty and 20 knots fully loaded (2 MBT or 6 APC or 1 cavalry platoon or 1 infantry section or 1 field engineer section or a hospital section, all with their equipments). The L-Cat can also be used as mobile berth for RHIB or launching SDV; there is also a multi-purpose patrol craft variation with added accommodation, and a multi-purpose projection vessel (MPV). "Tonnerre" has had good experience with embarking two US-type LCAC. Finally, "Tonnerre" is a 'green' ship with an extensive waste management system. From the following visit to FS "Verseau" (my third exposure to the TRIPARTITE Upgrades, after the visit of FS "Le Persée" in Brest in June 2005 and the BE/NL TRIPARTITE Upgrade demonstration by ATLAS Elektronik in Den Helder in August 2005) it should suffice to mention that it was surprising to see for the first time how small the ECA K-ster actually is (see figure 5) – from the brochure it looked bigger, with no reference possible.

The perhaps most interesting part was the demonstrations at the Centre des Essais et des Systèmes, the Shore Integration Facility (SIF) in Toulon-Saint Mandrier, run by DGA: This land test centre is indispensable during the software development and integration with hardware into the combat system, with critical elements like the Principle Anti-air Warfare system PAAMS, a new combat management system (CMS), the new multi-functional radar EMPAR, new long range radar and new landing radar. A replica of the HORIZON masts and of her CIC (see figure 6) serves the tasks of (1) integration of government-furnished equipment; (2) platform integration (before moving stuff onboard and having to redesign/relocate/rework interfaces at great costs after trials); (3) preparation of sea trials and firing demonstrations – the SIF has all ship capabilities ashore. In the near future the two masts and CIC of FREMM will be added. DCNS took the opportunity to highlight its 50-year experience in system integration for more than 10 world-wide customer navies, with the three pillars (1) global warship design, development & support; (2) combat system architecture & integration of all type assets; (3) CMS design & production. With a staff of 1,500 engineers they have the skills and tools to manage complex projects, offering scalable solutions, high interoperability levels, and improved operational effectiveness. The combat systems SETIS for surface ships and SUBTICS for submarines represent the top range, POLARIS the bottom range for OPV-type and "Foudre" type ships. NNOS is the support combat information system, a non-real time operational aid; a LINK Module serves the integration of L 11, L 16 and TDL, while SCAMARIS is an R&D programme to automate abnormal ship behaviour detection. Conclusion: DCNS – La Force de la Mer. *Eurosystnav* presented its involvement in the common combat system integration of Italian and French HORIZON frigates (that is why it is a JV of DCNS and Finmeccanica), for development & integration & qualification of the CMS and for the design & integration & qualification of the combat systems. *Eurosystnav* staff also comes from DCNS, *Elettronica*, *THALES*, *SELEX-SI*, *Eurotorp*, *Datamax*, and *ELSAG*. The SIF is similar to one on Portsmouth Hill/Portsmouth for the



Fig. 6: This is the topside replica of the HORIZON masts, with the CIC replica (see inset) and centres for testing individual elements like PAAMS or EMPAR underneath: the Shore Integration Facility (SIF) in Toulon-Saint Mandrier, to test the software and integrate it with the hardware into the combat system before putting it on the platform, saving cost and time.

Type 45, the German Command & Control Systems Command/Wilhelmshaven and what will become the equivalent of the Royal Netherlands Navy – topside configuration of future ships reproduced ashore to test the software before installation onboard the platform, the CIC being representative for and performing all 600 acceptance tests; a very convincing, time and money saving concept.

At Sophia-Antipolis after a brief overview of THALES worldwide (with THALES Naval expanding), THALES Underwater Systems (TUS) presented itself as the specialists in sonars for submarines, surface ships, torpedoes, and MCMV manned and unmanned. With 2,000 personnel total in the UK, France and Australia, they are engaged in the areas network enabled, airborne, naval service, and coastal surveillance & harbour protection capabilities, exporting to the Americas, Europe, Africa, and Asia. The Integrated FREMM Sonar Suite consists of the VDS active and passive (featuring automatic deployment), Bow Mounted Sonar (BMS) active and passive, torpedo warning BMS, obstacle avoidance BMS, plus integrated training capability. Innovations such as BMS transducer and common BMS-VDS transmitter architecture simplification provide state-of-the-art solutions for FREMM. Derived from the Route Survey TSM 2054 TSAS, TUS propose to use the sonar from USV for coastal surveillance & harbour protection (see figures 7 and 8). The other MW sonar is the DUBM 44 with automatic processing for classification (ROCKAN) – NB: this is a prerequisite for automatic AUV operation, and no competitor offers this capability so far. The FLASH helicopter dipping sonar lends itself to wider usage, for USV (see under SIREHNA below) and for multi-static operation with other sonars. The submarine passive towed array sonar uses the largest array possible,



covered with a specific plastic, the tube filled with oil. For surface ships it has been possible to reduce size and weight of the transducers: while an LF high power transducer weighs 20kg, the CAPTAS of T 23 / FREMM is 2.5m long and 2.5m high, one transducer weighs 6kg only, bringing down the total weight from 100 tons to 40 tons. The following presentations suffered from lack of time, with DGA having to cut them short. Eurotorp had no real news for our readers. From the Saft presentation it is particularly noteworthy that the company actively pur-

Fig. 7: An interesting adaptation of the THALES Underwater Systems (TUS) MW synthetic aperture sonar (SAS) for employment from a USV. (Graphic: Courtesy of TUS)

sues power density which is a MUST especially for SDV and smaller AUV (as they can be better shaped/re-packaged e.g. for conformal storage), but not the avenue of 'hot' ZEBRA type batteries. SNPE with its subsidiary Eurenco (European Energetic Corporation, co-owned with Patria and Saab) gave an overview of their portfolio in the area of pyrotechnics, explosives and propellants and cast plastic bonded explosives meeting the NATO standard for insensitive munitions.

In Lorient the first visit was to the Patrol Boats Centre. We were able to see the *Raidco Marine* RPB 20 gendarmerie patrol boat (see figure 9) built in GRP and certified by *Bureau Veritas*. It has been exported for use in many international markets. Its double-chine deep-V hull design provides excellent sea keeping with outstanding crew comfort. SIREHNA demonstrated their pre-financed (no contract yet) RODEUR unmanned surface vehicle (USV), a 9.2m 6 tons RHIB powered by a 720hp engine for a maximum speed of 50 knots in calm weather and 35 knots in Sea State 4 (see figure 10). It benefits from the company's unique ship dynamic control features (motion and hull monitoring, motion stabilisation control and moving mass stabilisation system, wave control for dynamic positioning) which enable e.g. for the first time the stabilised lowering of the FLASH sonar from a USV.

At the DCNS Corvettes and Frigates Centre (with the largest covered dry dock in Europe), the following tools are used: (1) Integrated Technical Information System (requirements management, design, CAD, production and control);

- Complete system for projection missions
 - Flexible system
 - Range control for the USV 15Kms
 - Safe control of the USV
 - Possibility to get people on board
- Autonomy: 16 hours at 8 knots

Unmanned Surface Vehicle

EXHIBITIONS AND EVENTS

(2) Virtual Reality (takes the customer and designers to the heart of the future ship); (3) Performance Assessment. Future emphasis is on life cycle costs, support concept, human factors & ergonomics, operations & networks. Their surface combatant line includes: GOWING family (<2,000t); FM 400 (4,000t); FREMM (6,000t); the FM 400 is derived from FREMM with a full range of specialised versions. At the Shipbuilding Workshop it was explained that DCNS started laser-welding eight months ago, plasma cutting was chosen because of cheaper maintenance of the machines and is done in the air as opposed to under water – we could see ourselves that the statement “welders have become programmers, a new experience” is justified. When questioned if the 2-mast configuration of FREMM was chosen because of the risk involved in a single mast configuration for electromagnetic interference reasons this was confirmed; however, it was stated that today it is possible to come up with a single enclosed mast even for ships of FREMM size. It was indicated that DCNS is close to signing the FREMM contract with Greece; this contract will include technology transfer. With the 11 French and one Moroccan FREMM one frigate will be delivered every seven months. Interesting figure: Commonality of HORIZON / ORIZZONTE is at around 80 percent, that between the French and Italian FREMM at around 25 percent only. MBDA presented the weapons outfit of FREMM, well known to our readers. But one future option is note worthy: a combined

Fig. 8: This shows the impressive high resolution results of the TUS SAS, making it a tool for harbour surveillance and survey of anchorages off shore. (Photos / Screen Shots: Courtesy of TUS)

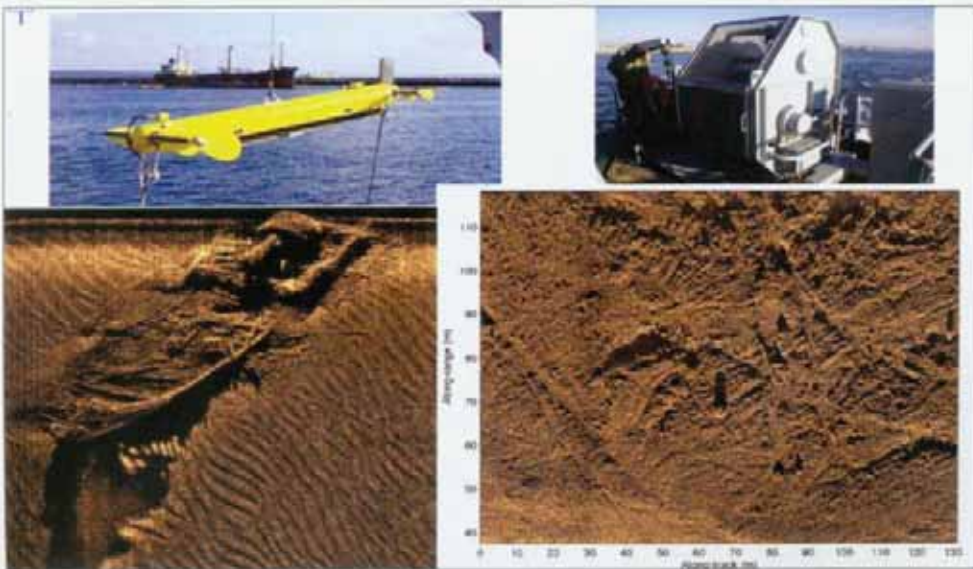


Fig. 9: The RPB 20 of Raidco Marine, seen here as a boat of the French Gendarmere, has been exported for use in many international markets. Its double-chine deep-V hull design provides excellent sea keeping with outstanding crew comfort.

ASTER/MICA load as an Agile Integrated Multi-spectral Air Defence System.

At the DCNS Submarines Centre, DGA presented the BARRACUDA SSN, with the first-of-class to be delivered in 2016, the sixth and final one in 2027. They will carry the ARTEMIS HWT derived for the French Navy from the BLACK SHARK, the SM39 EXOCET B12 Mod 2, and the Naval Cruise Missile (MdCN). The 4,700t/5,200t submarine will have a crew of 60 (12 officers) plus 15 commandos. Construction of the fourth “Triumphant” class SSBN “Le Terrible” is on schedule, the boat was transferred to the docking site in March. The DCNS

Submarine Project Manager explained the experience of over 100 years of building submarines, from 1t displacement to 15,000t. DCNS is also responsible for the daily service support of French Navy submarines. He pointed out the cross-fertilisation between SSK / SSN / SSBN, like from “Le Redoutable” and AGOSTA into “Rubis”, from “Le Triomphant” into SCORPENE, from “Le Triomphant” and SCORPENE into BARRACUDA, and from SCORPENE and BARRACUDA into ANDRASTA – the same team is working on all submarines. DCNS has a flexible industrial organisation for export, offering boats fully built in France, work sharing or full transfer of technology. ANDRASTA is a 48m coastal submarine displacing 850t / 950t with a maximum speed of 15 knots and 200m maximum diving depth, carrying a full weapons fit of HWT and SM39 EXOCET and a full sonar suite, comms and optronics outfit, manned by three watches of five personnel. Finally SCORPENE was highlighted and MESMA explained (same steam cycle as on nuclear submarines, with a combustion chamber and liquid oxygen added; vertical building of the block greatly eases construction and shortens building time). SCORPENE is offered in a modular build, i.e. the boat can be modified to customers requirements (like fitted for MESMA); X-rudder is possible. We would have loved to see the SCORPENE but the Royal Malaysian Navy had not permitted to go onboard or to take pictures.

The final visit was a very comprehensive presentation of what *Constructions Mécaniques de Normandie (CMN)* has to offer. Because Cherbourg is renowned for its rain all activities are carried out under cover (see figure 11). The yard has a 90m x 27m / 3,500t Synchrolift and is renowned for its patrol boats and small corvettes. But CMN started its business in 1912-1944 when M Amiot was building air planes. The first serial building of 12 fast attack craft took place in 1967-1969, this author participated in the launching of one of the first Type 148 guided missile boats for the (then) Federal German Navy in 1972 (the first steel-hulled FPBs of the FGN; 20 COMBATTANTE-II were built between CMN and Fr. Lürssen Werft). Between 1970 and 1972 20 wooden-hulled mine sweepers/mine hunters were built, and to date 129 naval units were produced (including 99 FAC) for 20 countries. But also civilian vessels of all types, but especially fast yachts are being produced at CMN which brings the total track record to 720 units for 27 countries. The yard is particularly proud of a Blue Ribbon Record: Aga Khan’s yacht for a non-stop trans-Atlantic crossing at an average speed of 67 knots. Today the naval line of products include the COMBATTANTE range (BR 42, CL 64, BR 70, CL 78),



Fig. 10: One of many possible roles of SIREHNA's RODEUR unmanned surface vehicle (USV), seen here doing harbour surveillance alongside the "Chevalier Paul" (second-of-class HORIZON frigate) in Lorient. It benefits from the company's unique ship dynamic control features (motion and hull monitoring, motion stabilisation control and moving mass stabilisation system, wave control for dynamic positioning) which enable e.g. for the first time the stabilised lowering of the FLASH sonar from a USV.

the VIGILANTE range (CL 54-400, PSSP, CL 52-400, CL 78-1400 OPV), and the INTERCEPTOR range (DV 15, DV 20, DV 33 with speeds up to 60 knots).

Today CMN can claim to be a world leader for light corvettes: BR 70 (w/o hangar), BR 71

(w/hangar), 30 knots vessels with two waterjets on the wing plus one central booster waterjet, 70m long, 915t. We could take a detailed look at "Baynunah" (BR 72) under construction for the UAE Navy, which will be armed with 8x MM40, VLS for ESSM, 1x RAM, 1x 76mm, 2x 27mm, and carry one 4.5t helicopter. The sensors include a 3D radar under a radome, a fire control radar, laser warning, and a target designation sight. Stealth technology expertise is demonstrated by weapon concealment, frequency selective surface technology, IR reduction. We were asked to respect the customer's wish not to take any photos, otherwise an illustrative photo of the vessel with aluminium superstructure would be included here. The BR 62S COMBATTANTE for an undisclosed Navy features the same stealth characteristics in a 60m boat for SOF support, strike, ISR and littoral operations, with IRST/EOD, surveillance radar/IFF, navigation radar, ESM, laser warning, SSM, SAM VL, main gun, side HMG, decoy launcher. VIGILANTEs were sold to the French Navy (10), Brazil (2 under construction), Oman (3). The VIGILANTE CL 78-1400 OPV is designed to French Navy requirements as a multi-role OPV capable of operating up to Sea State 6 for 30 days independently, supporting a 4.5t helicopter. The vessel measures 79m x 13.4m and displaces

1,470t; maximum speed is 24.5 knots, range @ 12 knots is 6,000nm, endurance 30 days. The CL 78 is also offered as a full-fledged corvette. For me the visit to CMN was a very illuminating renewal of an old acquaintance.

CONCLUSION

Going by the title of the press trip and the introduction by the President GICAN the aim was to portray the capabilities of French naval industry – undoubtedly this aim was fully met in a concerted effort of GICAN, DGA, the French Navy, and participating industry. NAVAL FORCES would like to thank everybody involved for the wealth of information provided. And we are grateful for the very generous hospitality extended to me as an eager observer. All those who did not get all their questions answered due to the very tight schedule: no doubt there is ample opportunity to do so during EURONAVAL when all these companies are represented again, which is why this trip was called Press Trip EURONAVAL. And a last admiration goes to our group of "power girls" who managed to herd together the group of journalists (difficult individualists) with a charming smile and met all additional requirements "at a flash". To everybody: BZ, very well done!

NAFO

Fig. 11: It seems to be a typical rainy day in Cherbourg, showing an aerial view of the facilities of Constructions Mécaniques de Normandie (CMN), which is why all facilities of CMN are covered. (Photo: Courtesy of CMN)

