



HF Controls Corp. • 1624 West Crosby Road Suite 124 • Carrollton, TX 75006 USA •  
Phone 469.568.6500 • Fax 469.568.6599 • www.hfcontrols.com

August 6, 2018

United States Nuclear Regulatory Commission  
11555 Rockville Pike,  
Rockville, Maryland 20852

Document Control Desk  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Subject: Submittal of Non-proprietary information for Amendment 4 to the HFC-6000  
Safety Platform

Reference: HFC-6000 Safety Control System

Ladies and Gentlemen:


In 2017, HF Controls formally requested the beginning of an Acceptance Review on Amendment 4 to the HFC-6000 Safety Platform. In June 2018, this Acceptance Review was withdrawn. This submittal for August 2018 is an updated and expanded document set, which shall serve as Doosan HF Controls' submission for Acceptance Review on Amendment 4 to the HFC-6000 Safety Platform.

Documents RR901-107-03, EPRI TR 107330 RTM FPGA Controllers, Rev. B and TR901-302-01 HFC-FPGA Control System of HFC-6000 Safety Platform Qualification Test Report Rev B remain unchanged from the original submission. VV901-300-10, HFC-6000 FPGA Test Specimen Design Description, Rev B and RR901-107-10 Amendment for HFC-FPGA System to HFC-6000 Safety Platform Rev E have been updated to better support the Acceptance Review process. The HFC Quality Assurance Program Manual and WI-ENG-108, FPGA Design, Implementation, and Test, Rev A have been added to the submission for further detail on HFC's Quality Assurance program and FPGA Development process.

We thank the agency for the work.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on August 6th 2018

Yours Truly,   
Eugene O'Donnell  
V&V Department Manager  
Doosan HF Controls

Enclosures:

1. Supporting documents in Proprietary and Non-Proprietary versions:

Non-Proprietary Version	Proprietary Version	Description	Rev.
QAPM-NP	QAPM-PI	Quality Assurance Program Manual	M
RR901-107-03-NP	RR901-107-03-PI	EPRI TR 107330 RTM FPGA Controllers	B
RR901-107-10-NP	RR901-107-10-PI	Amendment for HFC-FPGA System to HFC-6000 Safety Platform	E
TR901-302-01-NP	TR901-302-01-PI	HFC-FPGA Control System of HFC-6000 Safety Platform Qualification Test Report	B
VV901-300-10-NP	VV901-300-10-PI	HFC-6000 FPGA Test Specimen Design Description	B
N/A	WI-ENG-108-PI	FPGA Design, Implementation, and Test	A

2. Justification of Proprietary Information
3. Proprietary Information Notice

CC: Joseph J. Holonich, Sr. Project Manager  
Licensing Process Branch  
Division of Policy and Rulemaking  
Office of Nuclear Reactor Regulation  
MS O-12D1

Dr. Steve Yang  
Senior VP of Operations  
Doosan HF Controls

### Justification for Proprietary Information Affidavit

- (1) My name is Eugene O'Donnell. I am the V&V Department Manager of Doosan HF Controls (HFC) Corporation and as such, I have been specifically delegated the function of reviewing the proprietary information sought to be withheld from public disclosure in connection with nuclear power plant licensing and rulemaking proceedings, and am authorized to apply for its withholding on behalf of Doosan-HFC Corporation.
- (2) I am making this Affidavit in conformance with the provisions of 10 CFR Section 2.390 of the Commission's regulations and in conjunction with the Doosan HFC application for withholding accompanying this affidavit.
- (3) I have personal knowledge of the criteria and procedures utilized by Doosan HFC in designating information as trade secret, privileged or as confidential commercial or financial information.
- (4) Pursuant to the provisions of paragraph (b)(4) of Section 2.390 of the Commission's regulations, the following is furnished for consideration by the Commission in determining whether the information sought to be withheld from public disclosure should be withheld.
  - (a) The information sought to be withheld from public disclosure is owned and has been held in confidence by Doosan HFC Corporation.
  - (b) The information is of a type customarily held in confidence by Doosan HFC and not customarily disclosed to the public. Doosan HFC has a rational basis for determining the types of information customarily held in confidence by it and, in that connection, uses a uniform method to determine when and whether to hold certain types of information in confidence. The application of our method and the substance of constitute Doosan HFC's policy and provide the rational basis required.

Under the Doosan HFC method, information is held in confidence if it falls in one or more of several types of information, the release of which might result in the loss of an existing or potential competitive advantage as follows:

- ❖ Its use by a competitor would reduce his expenditure of resources and improve his competitive position in the design, manufacture, installation, assurance of quality, or licensing a digital based I&C system.
- ❖ It reveals cost or price information, production capacities, budget levels, or commercial strategies of Doosan HFC, its customers or suppliers.
- ❖ It reveals aspects of past, present or future Doosan HFC or customer funded development plans and programs of potential commercial value to Doosan HFC.
- ❖ It contains patentable ideas, for which patent protection may be desirable.

For this affidavit, all of the information marked proprietary is because its use by a competitor would reduce his expenditure of resources and improve his competitive position in the design, manufacture, installation, assurance of quality, or licensing a digital based I&C system (type one above). This leads to a Doosan HFC need to restrict certain commercial information from the public to prevent its use by competitors and creating a commercial advantage for them to the detriment of Doosan HFC.

The development of the HFC-6000 system design is the result of many years of development by uniquely experienced personnel in an intensive effort along with the expenditure of a considerable sum of money. In order for competitors to duplicate the Doosan HFC design and applicable information, similar technical programs would have to be performed and a significant manpower effort, having the requisite talent and experience would have to be expended for the development of a digital design to equal the HFC-6000 system design.

There are sound Doosan HFC policy reasons behind the Doosan HFC proprietary designation system which include the following:

- a) The Use of such information by Doosan HFC gives Doosan HFC a competitive advantage over its competitors. It is therefore, withheld from disclosure to protect the Doosan HFC competitive position.
  - b) It is information which is marketable in many ways. The extent to which such information is available to competitors diminishes the Doosan HFC ability to sell products involving the use of the information.
  - c) Use by our competitors would put Doosan HFC at a competitive disadvantage by reducing their expenditure or resources at Doosan HFC expense.
  - d) Each component of proprietary information pertinent to a particular competitive advantage is potentially as valuable as the total competitive advantage. If competitors acquire components of proprietary information, any one component may be the key to the entire puzzle, thereby depriving Doosan HFC of a competitive advantage.
  - e) Unrestricted disclosure would jeopardize the position of Doosan HFC in the world market such as South Korea, and thereby give a market advantage to the competition in those countries.
- (5) The information is being transmitted to the Commission in confidence and, under the provisions of 10 CFR 2.390, it is to be received in confidence by the Commission.
  - (6) Available information has not been previously employed in the same original. The information sought to be protected is not available in public sources or manner or method to the best of our knowledge and belief.
  - (7) All documents in this submittal are to be held as proprietary in their entirety, as listed in the table below:



Proprietary Version	Description	Rev.
RR901-107-03-PI	EPRI TR 107330 RTM FPGA Controllers	B
RR901-107-10-PI	Amendment for HFC-FPGA System to HFC-6000 Safety Platform	E
TR901-302-01-PI	HFC-FPGA Control System of HFC-6000 Safety Platform Qualification Test Report	B
VV901-300-10-PI	HFC-6000 FPGA Test Specimen Design Description	B
QAPM-PI	Quality Assurance Program Manual	M
WI-ENG-108-PI	WI-ENG-108, FPGA Design, Implementation, and Test	A

- (8) The proprietary information sought to be withheld in the submittal is that which is appropriately marked by deletion, with brackets in some documents, in the following HFC non-proprietary documents:

Document Number	Description	Revision
RR901-107-03-NP	EPRI TR 107330 RTM FPGA Controllers	B
RR901-107-10-NP	Amendment for HFC-FPGA System to HFC-6000 Safety Platform	E
TR901-302-01-NP	HFC-FPGA Control System of HFC-6000 Safety Platform Qualification Test Report	B
VV901-300-10-NP	HFC-6000 FPGA Test Specimen Design Description	B
QAPM-NP	Quality Assurance Program Manual	M
WI-ENG-108-NP	WI-ENG-108, FPGA Design, Implementation, and Test	A

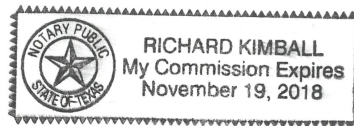
AFFIDAVIT, STATE OF TEXAS, COUNTY OF Dallas

Before me, the undersigned authority, personally appeared Eugene O'Donnell, who, being by me duly sworn according to law, deposes and says that he is authorized to execute this Affidavit on behalf of Doosan HF Controls Corporation (HFC) and the averments of fact set forth in this Affidavit are true and correct to the best of his knowledge, information and belief:

Eugene O'Donnell  
Eugene O'Donnell

Sworn to and subscribed

Before me this 6TH day  
of AUGUST, 2018



Notary Public

Richard Kimball



## **Submittal Documents Proprietary Version**

1. **RR901-107-03-PI EPRI TR 107330 RTM FPGA Controllers, Rev B**
2. **RR901-107-10-PI Amendment for HFC-FPGA System to HFC-6000 Safety Platform, Rev E**
3. **TR901-302-01-PI HFC-FPGA Control System of HFC-6000 Safety Platform Qualification Test Report, Rev B**
4. **VV901-300-10-PI HFC-6000 FPGA Test Specimen Design Description, Rev B**
5. **QAPM-PI Quality Assurance Program Manual, Rev M**
6. **WI-ENG-108-PI WI-ENG-108, FPGA Design, Implementation, and Test, Rev A**



**HF Controls**

## Proprietary Information Notice

On August 6, 2018, Doosan HF Controls transmitted the following documents in non-proprietary format:

Document Number	Description	Revision
RR901-107-03-NP	Full Document	B
RR901-107-10-NP	Full Document	D
TR901-302-01-NP	Full Document	B
VV901-300-10-NP	Full Document	A
QAPM-NP	Full Document	M
WI-ENG-108-NP	Full Document	A

In order to conform to the requirements of 10 CFR 2.390 concerning the protection of proprietary information submitted to the NRC, the proprietary version of the document listed above is marked "HFC Proprietary" on the title page and on each subsequent page containing proprietary information. For the corresponding non-proprietary versions, all proprietary information has been deleted, with brackets or greyed-in fields in some documents, such that only non-proprietary information remains. In addition, the deletion was done in the manner such that the formatting of the documents was preserved so that page numbers, headings and section numbers remain unchanged. Since the basis for deleting the information in all instances is to protect Doosan HFC corporation confidential commercial information; there is no adjacent marking for each deletion as specified in 2.390(b)(1)(a)(i)(B). Instead, in order to facilitate the review process, the locations of the proprietary information in each file are listed in the table below:

Document Number	Locations of the proprietary information as deleted in the non-proprietary version
RR901-107-03-PI	Pages 10-65, Comments column text has been removed.
RR901-107-10-PI	Page 21: Figure 1 Page 30: Figure 2 Page 41-42: Figure 7 and associated text Page 42-43: Figure 8 and associated text Pages 43-44: Communication protocol details Page 68: Testing locations
TR901-302-01-PI	Page 17: AI and AO channel details, Table 2 Page 18: Table 2, file name Pages 19, 29-33, 51, 52, 64, 65, 72, 76, 82-85, 90, 91, 93- 96, 106, 107, 118-123, 135-138, 141, 142, 151, 152, 171-173, 178-182, 184, 187-202, 205, 213, 214: Analog values Page 20, 24, 34-36, 38, 42-46, 49, 50, 54-58, 66-68, 70-72, 75, 77-82, 86-88, 90, 97-100, 105, 107-115, 119-122, 139-141, 143-145, 147, 150, 152-160, 168, 169, 173, 174, 179, 180, 182, 184, 203-207, 210, 212, 213, 215-



	<p>223: Response times</p> <p>Page 30: Figure 6</p> <p>Page 33, 34, 39-45, 50-53, 58, 59, 65, 67, 68, 70, 71, 73, 76, 77, 83, 89, 91, 92, 96-106, 109, 111-113, 116, 118, 120, 122, 123, 126-135, 138-140, 144-150, 152, 156, 158-170, 172-180, 182, 183, 185, 186, 188-192, 194, 196, 197, 202-204, 206-215, 220-225: Test result evaluation</p> <p>Page 62, 63, 66, 74, 75, 77, 78, 80, 83, 85-88, 117, 118, 123-125, 150, 161-163, 167, 170, 171, 177, 178, 196, : Test configuration details</p> <p>Page 34: Figure 7</p> <p>Pages 35, 62: Voltages</p> <p>Page 37: Figures 8-10</p> <p>Page 41: Figure 12</p> <p>Page 47: Figure 13</p> <p>Page 48: Figure 14</p> <p>Page 62: Figure 16</p> <p>Page 65: Figure 17</p> <p>Page 69: Figure 18</p> <p>Page 70: Figure 19</p> <p>Pages 75, 76: Figure 20</p> <p>Page 79: Figure 21</p> <p>Page 81: Figure 22</p> <p>Page 85: Figure 23</p> <p>Page 88: Figure 24</p> <p>Page 89: Figure 25</p> <p>Page 99: Figure 26</p> <p>Page 102: Figures 27 and 28</p> <p>Page 104: Figure 29</p> <p>Page 117: Figure 30</p> <p>All attachments removed</p>
WI-ENG-108-PI	<p>Page 4: Design Process detailed steps and output files types</p> <p>Pages 5-7: Design Process detailed steps</p> <p>Page 12: Message format</p> <p>Page 13: Test Case details and file contents</p> <p>Page 14: Simulation case details</p> <p>Pages 14-15: Detailed test items</p> <p>Page 17: Design Checklist</p>
VV901-300-10-PI	<p>Page 6: details of differences between racks, F-Link details.</p> <p>Page 7: F-Link details, G-Link details</p> <p>Page 8: Figure 2</p> <p>Page 10: Specific FPGA chips used</p>

	Page 16: FPC08 Function details Pages 18 and 19: Master Configuration List details
QAPM	Page 36: Quality Management Flowchart

The documents RR901-107-03 and TR901-302-01 are unchanged from previous HFC submissions to the USNRC, and no changes in proprietary withholdings have been made for this submission.