

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT3725458

|                                                                                                                                                                                                 |                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| <b>SUBMISSION TYPE:</b>                                                                                                                                                                         | NEW ASSIGNMENT                          |
| <b>NATURE OF CONVEYANCE:</b>                                                                                                                                                                    | ASSIGNMENT                              |
| <b>CONVEYING PARTY DATA</b>                                                                                                                                                                     |                                         |
| <b>Name</b>                                                                                                                                                                                     | <b>Execution Date</b>                   |
| Tadashi NAKANISHI                                                                                                                                                                               | 12/22/2015                              |
| Shinji KOSEKI                                                                                                                                                                                   | 01/07/2016                              |
| Yoshihiko ODA                                                                                                                                                                                   | 12/22/2015                              |
| Hiroaki TODA                                                                                                                                                                                    | 01/04/2016                              |
| <b>RECEIVING PARTY DATA</b>                                                                                                                                                                     |                                         |
| <b>Name:</b>                                                                                                                                                                                    | JFE Steel Corporation                   |
| <b>Street Address:</b>                                                                                                                                                                          | 2-3, Uchisaiwai-cho 2-chome, Chiyoda-ku |
| <b>City:</b>                                                                                                                                                                                    | Tokyo                                   |
| <b>State/Country:</b>                                                                                                                                                                           | Japan                                   |
| <b>Postal Code:</b>                                                                                                                                                                             | 1000011                                 |
| <b>PROPERTY NUMBERS Total: 1</b>                                                                                                                                                                |                                         |
| <b>Property Type</b>                                                                                                                                                                            | <b>Number</b>                           |
| <b>Application Number:</b>                                                                                                                                                                      | 14909940                                |
| <b>CORRESPONDENCE DATA</b>                                                                                                                                                                      |                                         |
| <b>Fax Number:</b>                                                                                                                                                                              | (703)836-2787                           |
| <i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.</i> |                                         |
| <b>Phone:</b>                                                                                                                                                                                   | 703-836-6400                            |
| <b>Email:</b>                                                                                                                                                                                   | email@oliff.com                         |
| <b>Correspondent Name:</b>                                                                                                                                                                      | JAMES A. OLIFF                          |
| <b>Address Line 1:</b>                                                                                                                                                                          | OLIFF PLC                               |
| <b>Address Line 2:</b>                                                                                                                                                                          | P.O. BOX 320850                         |
| <b>Address Line 4:</b>                                                                                                                                                                          | ALEXANDRIA, VIRGINIA 22320-4850         |
| <b>ATTORNEY DOCKET NUMBER:</b>                                                                                                                                                                  | 168937                                  |
| <b>NAME OF SUBMITTER:</b>                                                                                                                                                                       | INDIA WAGNER                            |
| <b>SIGNATURE:</b>                                                                                                                                                                               | /India Wagner/                          |
| <b>DATE SIGNED:</b>                                                                                                                                                                             | 02/03/2016                              |
| This document serves as an Oath/Declaration (37 CFR 1.63).                                                                                                                                      |                                         |
| <b>Total Attachments: 2</b>                                                                                                                                                                     |                                         |

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**ASSIGNMENT (BEING FILED FOR DUAL PURPOSE UNDER 37 CFR 1.63(e))  
For Application with Filing Date on or after September 16, 2012**

**ASSIGNMENT**

|              |                                                    |                                                                                    |                                                                               |
|--------------|----------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| <b>(1-8)</b> | <b>Insert<br/>Legal Name(s)<br/>of Inventor(s)</b> | (1) <u>Tadashi NAKANISHI</u><br>(3) <u>Yoshihiko ODA</u><br>(5) _____<br>(7) _____ | (2) <u>Shinji KOSEKI</u><br>(4) <u>Hiroaki TODA</u><br>(6) _____<br>(8) _____ |
|--------------|----------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|

In consideration of the sum of one dollar (\$1.00) and other good and valuable consideration paid to each of the undersigned, the receipt and sufficiency of which are hereby acknowledged, each undersigned agrees to assign, and hereby does assign, transfer and set over to

|             |                                   |                                                                           |
|-------------|-----------------------------------|---------------------------------------------------------------------------|
| <b>(9)</b>  | <b>Insert Name of Assignee</b>    | (9) <u>JFE STEEL CORPORATION</u>                                          |
| <b>(10)</b> | <b>Insert Address of Assignee</b> | (10) <u>2-3, Uchisaiwai-cho 2-chome, Chiyoda-ku, Tokyo 1000011, Japan</u> |

(hereinafter designated as the Assignee) and Assignee's heirs, successors, assigns and legal representatives, the entire right, title and interest for the United States of America as defined in 35 U.S.C. §100, in the invention, and in all applications for patent including any and all provisional, non-provisional, divisional, continuation, international, substitute and reissue application(s), and all Letters Patent, extensions, reissues and reexamination certificates that may be granted on the invention known as

|             |                                                                                        |                                                                                                |
|-------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| <b>(11)</b> | <b>Insert Identification such as Title, Case Number, or Foreign Application Number</b> | (11) _____<br>_____<br>(Attorney Docket No. <u>168937</u> ), filed on even date herewith or as |
|-------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|

|             |                                                          |                                                                     |
|-------------|----------------------------------------------------------|---------------------------------------------------------------------|
| <b>(12)</b> | <b>Alternative Identification for filed applications</b> | (12) U.S. Application Number _____<br>filed <u>February 3, 2016</u> |
|-------------|----------------------------------------------------------|---------------------------------------------------------------------|

- 1) Each undersigned agrees to execute all papers necessary in connection with any application and/or patent for the invention and also to execute separate assignments in connection with such applications and patents as the Assignee may deem necessary.
- 2) Each undersigned agrees to execute all papers necessary in connection with any interference or post-grant proceeding which may be declared concerning any application or patent for the invention and to cooperate with the Assignee in every way possible in obtaining evidence and going forward with such interference or post-grant proceeding.
- 3) Each undersigned agrees to execute all papers and documents and perform any act which may be necessary in connection with claims or provisions of the International Convention for Protection of Industrial Property or similar agreements.
- 4) Each undersigned agrees to perform all affirmative acts which may be necessary to obtain, maintain or confirm by reissue or reexamination a grant of a valid United States patent to the Assignee.
- 5) Each undersigned authorizes and requests the Commissioner of the U.S. Patent and Trademark Office to issue any and all patents resulting from said application(s) to the said Assignee, as Assignee of the entire interest, and covenants that he or she has full right to convey the entire interest herein assigned, and that he or she has not executed, and will not execute, any agreement(s) in conflict herewith, and agrees that this assignment is binding on Assignor and Assignor's heirs, successors, assigns and legal representatives.
- 6) Each undersigned hereby grants the firm of **OLIFF PLC** the power to insert on this assignment any further identification that may be necessary or desirable in order to comply with the rules of the United States Patent and Trademark Office for recordation of this document.

**(13) Declaration**

As an above named inventor, I hereby declare that:

I believe I am the original inventor or an original joint inventor of a claimed invention (or claimed design) in the above-identified application for which this declaration is being submitted.

The application was made or authorized to be made by me.

I have reviewed and understand the contents of the above-identified application, including the claims, and am aware of the duty to disclose to the Office all information known to me to be material to patentability as defined in 37 CFR §1.56.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

In witness whereof, executed by the undersigned on the date(s) opposite the undersigned name(s).

Date December 22, 2015 Inventor Signature Tadashi Nakanishi (SEAL)  
NAKANISHI, Tadashi

Date January 07, 2016 Inventor Signature Shinji Koseki (SEAL)  
KOSEKI, Shinji

Date December 22, 2015 Inventor Signature Yoshihiko Oda (SEAL)  
ODA, Yoshihiko

Date January 04, 2016 Inventor Signature Hiroaki Toda (SEAL)  
TODA, Hiroaki

Date \_\_\_\_\_ Inventor Signature \_\_\_\_\_ (SEAL)

Date \_\_\_\_\_ Inventor Signature \_\_\_\_\_ (SEAL)

Date \_\_\_\_\_ Inventor Signature \_\_\_\_\_ (SEAL)

Date \_\_\_\_\_ Inventor Signature \_\_\_\_\_ (SEAL)

This assignment should preferably be signed before: (a) a Notary Public if within the U.S.A. (b) a U.S. Consul if outside the U.S.A. If neither, then it should be signed before at least two witnesses who also sign here:

Date January 19, 2016 Witness Kazuaki Tamura  
TAMURA, Kazuaki

Date January 19, 2016 Witness Izumi Shimoyama  
SHIMOYAMA, Izumi