ER SHEET FORM PTO-1595 U.S. DEPARTMENT OF 12-01-2004 (Rev. 6-93) Patent and Trademark OMB No. 0651-3011 (exp. 4/94) Tab settings ⇒⇔⇒ To the Honorable Commissioner of Patents and Trademarks: Please record the attached original documents or copy thereof. 1. Name of conveying party(ies): 2. Name and address of receiving party(ies) Scott M. Packer, Russell J. Steel, Jonathan A. Name: Smith International, Inc. Babb, Chris Reed and Brian E. Taylor 16740 Hardy Street Address: Additional name(s) of conveying party(ies) attached? ☐ Yes ☒ No Houston, Texas 77032 3. Nature of conveyance: ☐ Merger ☐ Change of Name ☐ Security Agreement □ Other Additional Name(s) & address(es) attached? ☐ Yes ☒ No Execution Date: Oct. 27, 2004, Oct. 28, 2004, Nov. 19, 2004 4. Application number(s) or patent number(s): If this document is being filed together with a new application, the execution date of the application is: August 4, 2004 A. Patent Application No.(s) B. Patent No.(s) 10/912,736 Additional numbers attached? ☐ Yes ☒ No Name and address of party to whom correspondence 5. Total number of applications and patents involved: 1 concerning document should be mailed: 7. Total fee (37 CFR 3.41) David W. O'Bryant Name: Internal Address: ☑ Enclosed MORRISS O'BRYANT COMPAGNI, P.C. ☑ Authorized to be charged to deposit account Street Address: 136 South Main Street, Suite 700 8. Deposit account number: 11/30/2004 GTDN11 00000109 10912736 50-0881 (Deficiencies Only) 01 FC:8021

(Attach duplicate copy of this page if paying by deposit account)

DO NOT USE THIS SPACE

9. Statement and signature.

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.

David W. O'Bryant

Name of Person Signing

City: Salt Lake City State: Utah ZIP: 84101

Total number of pages including cover sheet, attachments, and document: 8

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Attorney Docket No.	2761.SMII.NP
Inventor(s)	Scott M. Packer et al.
Assignee	Smith International, Inc.
Serial Number	10/912,736
Filing Date	August 4, 2004

WHEREAS Scott M. Packer, Russell J. Steel, Jonathan A. Babb, Chris Reed and Brian E. Taylor ("Assignors"), residents of Utah, have invented a certain new and useful improvement in CRACK REPAIR USING FRICTION STIR WELDING ON MATERIALS INCLUDING METAL MATRIX COMPOSITES, FERROUS ALLOYS, NON-FERROUS ALLOYS, AND SUPERALLOYS, the application for United States Letters Patent which is identified above; and

WHEREAS, Smith International, Inc. ("Assignee"), a corporation of the State of Delaware, having a business address of 16740 Hardy Street, Houston, Texas 77032, is desirous of acquiring the entire right, title, and interest in the same;

NOW, THEREFORE, in consideration of one dollar (\$1.00), the receipt and sufficiency whereof is hereby acknowledged, and other good and valuable consideration, We, the said Scott M. Packer, Russell J. Steel, Jonathan A. Babb, Chris Reed and Brian E. Taylor, by these presents, do sell, assign, and transfer unto said Smith International, Inc., the full and exclusive right to the said invention and in and to said application and any and all provisionals, non-provisionals, divisions and continuations, substitutes and reissues of said application and the entire right, title, and interest in, to and under any and all Letters Patent of the United States and foreign countries that may issue or be granted on said invention.

The Assignors hereby authorize the Assignee to apply for and receive any and all United States and foreign patents relating to such improvements in its own name.

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Attorney Docket No.	2761.SMII.NP
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Assignee	Smith International, Inc.
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Filing Date	August 4, 2004

The Assignors hereby authorize and request the issuing authority to issue any and all United States and foreign patents granted on such improvements to and in the name of the Assignee.

The Assignors warrant and covenant that no assignment, grant, mortgage, license or other agreement or encumbrance affecting the rights and property herein conveyed has been or will be made or entered into by the undersigned, and that the full right to convey the same as herein expressed is possessed by the undersigned.

When requested by and at the expense of the Assignee, the Assignors covenant to carry out in good faith the intent and purpose of this agreement, to execute all provisional, non-provisional, divisional, continuing, substitute, renewal and reissue, and all other patent applications relating to any and all improvements relating to the invention; to execute all rightful oaths, declarations, assignments, powers of attorney and other papers; to communicate to the Assignee all facts and provide to the Assignee all documents and things known and accessible to the undersigned relating to such improvements and the history thereof, and testify as to the same in any interference, litigation or other proceeding relating thereto; and generally to do everything which the Assignee shall consider desirable for vesting title to such improvements in the Assignee, and to secure, maintain, defend and enforce valid and enforceable patent protection for the invention.

The Assignors hereby agree and acknowledge that the sale, assignment and transfer of rights and property set forth herein is and shall be irrevocable and binding upon the heirs,

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Attorney Docket No.	2761.SMII.NP
Inventor(s)	Scott M. Packer et al.
Assignee	Smith International, Inc.
Serial Number	10/912,736
Filing Date	August 4, 2004

assigns, representatives and successors of each undersigned Assignor and extend to the successors, assigns and nominees of the Assignee.

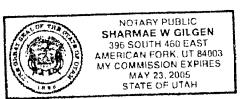
The Commissioner of Patents is hereby authorized and requested to issue said

Letters Patent to said Smith International, Inc. as the Assignee of the entire right, title, and
interest in and to the same, for its sole use and behoof; and for the use and behoof of its
legal representatives, to the full end of the term for which said Letters Patent may be
granted, as fully and entirely as the same would have been held by us had this assignment
and sale not been made.

Executed this / 7 day of _	November 1, 2004 at	from	ut
	1 Lell	(city)	(state)
STATE OF tah)	Scott M. Packer		
: ss County of <u>Utan</u>)			

Before me personally appeared Scott M. Packer and acknowledged the foregoing instrument to be his free act and deed this _______, 2004.

Notary Public



Page <u>4</u> of <u>7</u>

Attorney Docket No.	2761.SMII.NP
Inventor(s)	Scott M. Packer et al.
Assignee	Smith International, Inc.
Serial Number	10/912,736
Filing Date	August 4, 2004

Executed this 27 day of October	, 2004 at	Provo (city)	, <u>Utah</u> (state)
STATE OF Wan) Russel) // Steel		, ,
: ss County of <u>Man</u>)			
Before me personally appeared Russell instrument to be his free act and deed this			oregoing , 2004.
Starnach Glasn			
Notary Public	A A	NOTARY PUBLIC SHARMAE W GILGEN 396 SOUTH 460 EAST MERICAN FORK, UT 84003 IY COMMISSION EXPIRES MAY 23, 2005 STATE OF UTAH	

Page <u>5</u> of <u>7</u>

Attorney Docket No.	2761.SMII.NP
Inventor(s)	Scott M. Packer et al.
Assignee	Smith International, Inc.
Serial Number	10/912,736
Filing Date	August 4, 2004

Executed this 29 day of	October 2004 at		- , Mak
		(city)	(state)
STATE OF Atah)	Jonathan A. Babb		
: ss County of <u>MM</u>)			
Before me personally appear instrument to be his free act and d	ared Jonathan A. Babb and leed this <u> </u>	acknowledged	the foregoing, 2004.
Source W. Alber			

NOTARY PUBLIC
SHARMAE W GILGEN
396 SOUTH 460 EAST
AMERICAN FORK, UT 84003
MY COMMISSION EXPIRES
MAY 23, 2005
STATE OF UTAH

Notary Public J

Page <u>6</u> of <u>7</u>

NOTARY PUBLIC
SHARMAE W GILGEN
396 SOUTH 460 EAST
AMERICAN FORK, UT 814003
MY COMMISSION EXPIRES
MAY 22, 2008
STAYE OF UTAH

Attorney Docket No.	2761.SMII.NP
Inventor(s)	Scott M. Packer et al.
Assignee	Smith International, Inc.
Serial Number	10/912,736
Filing Date	August 4, 2004

Executed this 27 day of Oct , 2004 at Prove ,	Ach
	tate)
David Red	
STATE OF Zitan Chris Reed	
County of Tetrin)	
Before me personally appeared Chris Reed and acknowledged the foregoing instrument to be his free act and deed this 27th day of 4 Colored, 1) 2004.
Notary Public	

Page _7_ of _7_

RECORDED: 11/29/2004

Attorney Docket No.	2761.SMII.NP
Inventor(s)	Scott M. Packer et al.
Assignee	Smith International, Inc.
Serial Number	10/912,736
Filing Date	August 4, 2004

Executed this 19th day of Mrchikez	, 2004 at	Provo,	Utah
	7	(city)	(state)
STATE OF Wall Brian E.	Taylor		
County of Wan)			
Before me personally appeared Brian E. T instrument to be his free act and deed this/9 ⁺⁷	aylor and acl	knowledged the for	regoing , 2004.
Sarge W. J. Garage Notary Public		NOTARY PUBLIC SHARMAE W CILGEN 396 SOUTH 460 EAST IMERICAN FORK, UT 84003 MY COMMISSION EXPIRES MAY 23, 2005 STATE OF UTAH	