DOE NEPA Tracking Number

### U. S. DEPARTMENT OF ENERGY, OFFICE OF SCIENCE INTEGRATED SUPPORT CENTER—CHICAGO OFFICE

### NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) ENVIRONMENTAL EVALUATION NOTIFICATION FORM

# To be completed by "Applicant," i.e., organization with responsibilities for a "Federal action" involving application to DOE for a permit, license, exemption or allocation, or other similar actions. For assistance with this Form, refer to "Instructions for Preparing ISC-CH F-560, Environmental Evaluation Notification Form."

Solicitation/Award No.	(if applicable): DE-SC0019106
Organization Name:	QuesTek Innovations LLC Evanston, IL
Proposed Action Title:	Materials Genome Enabled Development of 3100 Capable Multilayer, Multicomponent Thermal and Environmental Barrier Coatings for CMCs

Total DOE Funding/Total Funding: \$224,939.00

- I. <u>Project Description:</u> (Use explanation pages if additional space is required)
  - A. Proposed Project/Action (if applicable, delineate Federally funded/Non-Federally funded portions)

QuesTek will lead the overall STTR program with the long-term objective to design and develop unique compositions to enable the application of T/EBCs for higher temperature gas turbines. Prof. David Poerschke from University of Minnesota (UMN) will be the university partner conducting experiments to support the design of high performance T/EBCs based on his expertise in the area of high-temperature oxidation and the environmental protection challenges involved in implementing SiC-CMC technology in gas turbine systems.

II. Description of Affected Environment: (Use explanation pages if additional space is required)

The proposed research can directly enhance the success of DOE's Advanced Turbine Program, and the ability to obtain benefits from higher turbine combustion operating temperatures. This can help:

Commercialize coal-fired Integrated Gasification Combined Cycle (IGCC) plants.

• Achieve greater energy efficiency and CO2 reduction in other land-based gas turbines applications (e.g. utilities, industrial applications, and CHP).

- Achieve greater energy efficiency in aerospace transportation.
- Provide additional benefits in demanding materials environments, such as rocket engines.

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No

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Yes

No ☑

## III. Preliminary Questions:

A. Is the DOE-funded work routinely administrative or entirely advisory or a "paper study?"

If "Yes", ensure that the description in Section I reflects this and go directly to Section V.

# B. Is there any potential whatsoever for: (Provide an explanation for each "Yes" response)

1. 2. 3.	Work to be performed outdoors? Major modification of a building interior? Threat of violation of applicable statutory, regulatory, or permit reguirements for		N N N N
	environment, safety, and health?	Г	
4.	Siting, construction or major expansion of waste treatment, storage, or disposal facilities?		V
5.	Disturbance to hazardous substances, pollutants, or contaminants preexisting in the		$\checkmark$
6	environment? The presence of any environmentally-sensitive resources?		
0. 7.	Any potential whatsoever for high consequence impacts to human health or the environment?		$\checkmark$
8.	The work being connected to another existing/proposed activity that could		$\checkmark$
	potentially create a significant impact?		
9.	Nearby past, present, and/or reasonably foreseeable future actions such that collective	ely	M
40	significant impacts could result?		
10.	resource usage?	iy 🗀	

If "No" to ALL Section III.B. questions, go directly to Section V.

- IV. Potential Environmental Effects: (Provide an explanation for each "Yes" response)
  - A. Environmentally Sensitive Resources: Could the proposed action potentially result in changes and/or disturbances to any of the following resources?

			Yes	No
	1.	Threatened/Endangered Species and/or Critical Habitats		
	2.	Other Protected Species (e.g., Burros, Migratory Birds, Pollinators)		
	3.	Sensitive Environments (e.g., Tundra/Coral Reefs/Rain Forests)		
	4.	Cultural or Historic Resources		
	5.	Important Farmland		
	6.	Non-Attainment Areas for Ambient Air Quality Standards		
	7.	Class I Air Quality Control Region		
	8.	Special Sources of Groundwater (e.g. Sole Source Aquifer)		
	9.	Navigable Air Space		
	10.	Coastal Zones		
	11.	Areas with Special National Designation (e.g. National Forests, Parks, Trails)		
	12.	Floodplains and/or Wetlands		
_	D	Line C. Laterana (Anti-Aleran Manual the prepared action involve any of the following re-	aulated Ita	
В.	activit	lated Substances/Activities: would the proposed action involve any of the following re	guiateu ite	
	13.	Natural Resource Damage Assessments		
	14.	Invasive Species or Exotic Organisms		
	15	Noxious Weeds		

- 16. Clearing or Excavation greater than one acre or Removal of Trees Governed by Local Requirement
- 17. Dredge or Fill (under Clean Water Act, Section 404, greater than one acre)

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18.       Noise (in excess of regulations)       9         19.       Asbestos Removal       9         20.       Polychlorinated biphenyls (PCBs)       1         21.       Import, Manufacture, or Processing of Toxic Substances       9         22.       Chemical Storage/Use       9         23.       Pesticide Use       9         24.       Hazardous, Toxic, or Criteria Pollutant Air Emissions       9         25.       Liquid Effluents       9         26.       Spill Prevention/Surface Water Protection       9         27.       Underground Injection       9         28.       Underground Storage Tanks       9         30.       Radiactive or Radioactive Mixed Waste       9         31.       Radiactive or Radioactive Mixed Waste       9         32.       Greentouse Gas Generation/Sustainability       9         33.       Generation/Sustainability       9         33.       Greentouse Gas Generation/Sustainability       9         34.       Ozone Depleting Substances       9         35.       Greithy Level 3-4 Laboratory       9         38.       Research on Human Subjects or other Vertebrate Animals       9         39.       Facility footprint exceeds 5,000 Squa	<u>ns or</u>
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DOE NEPA		E NEPA Track	king Number		
Remai	nder	to be completed by DOE		19	
VI.	DO	E Concurrence/Recommendation/Determination:			
	A.	DOE Project Director/Program Manager or Contract/Grant Management Spe	ecialist:	Yesr	No
		Has the Applicant completed this Form correctly? Does an existing generic categorical exclusion apply? If ves_indicate:			
		Name and Title Hannah Gill Contract Spec	ialist		
		Signature Annah Jey Date:	08/15/	2018	
	В.	DOE NEPA Team Review (if requested):		Yes	No
		Is the class of action identified in the DOE NEPA Regulations (Appendices Subpart D (10 CFR § 1021))? If yes, specify the class(es) of action: <u>B3</u> .6	A-D to	Ā	
		Name and Title:			
		Signature: Date:			-
	C.	DOE Counsel (if requested):			
		Name and Title:	,,		
		Signature: Date:			
80 - O	D.	DOE NEPA Compliance Officer:			
	The 1021	preceding pages are a record of documentation required under DOE Final Ni 1.410.	EPA Regulati	ion, 10 CFR <u>§</u>	
Action may be categorically excluded from further NEPA review. I have determined that action meets the requirements for Categorical Exclusion referenced above.			that the propos	sed	
	Action requires approval by Head of the Field Organization. Recommend preparation of an Environmental Assessment.			on of an	
	Action requires approval by Head of the Field Organization or a Secretarial Officer. Recommend preparation of an Environmental Impact Statement.				
		Comments/limitations if any:			
		NEPA Compliance Officer:			
		Name: Peter K. Sieboch		1.1	
Signature: Date: 8/1				17/20	18

Page 4 of 4