

# Material Safety Data Sheet 材料安全数据表

Name of Products: Lithium-ion Battery Pack

产品名称: 锂离子电池组

Model/type reference:

型号: VK-48V14Ah-G-13S4P

Applicant: Ningbo Veken New Energy Technology CO., Ltd

申请商 宁波维科新能源科技有限公司

Address of Applicant: #1, North Plant, 1 Building, No.3, Gangxi Avenue, North Part of Ningbo

Tax-protected Zone, Zhejiang Province 申请商地址:

浙江省宁波保税西区港西大道3号1幢-1北侧厂房

Date of issue: 2023-03-03

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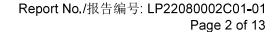
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## Section 1 – Identification of the product and supplier

第一部分 - 产品及供应商标识

Product Name: Lithium-ion Battery Pack

产品名称: 锂离子电池组

Model No./型号: VK-48V14Ah-G-13S4P

Nominal Voltage/标称电压: 48V

Rated Capacity/额定容量: 14Ah, 672Wh

Manufacturer's / Supplier Name: Ningbo Veken New Energy Technology CO., Ltd

制造商/供应商: 宁波维科新能源科技有限公司

Address: No.27, Weiwu Road, Veken Industrial Park, Xiaogang, Beilun District, Ningbo City, Zhejiang

Province

地址: 浙江省宁波市北仑区小港维科工业园纬五路27号

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Preparation Date/发行日期: 2023-03-03

Inspection according to/检验依据: EEC Directive 93/112/EC UN "Recommendations on the TRANSPORT OF

DANGEROUS GOODS"

#### Section 2 – Hazards Identification 第二部分 – 危害识别

Preparation	Not dangerous with normal use. Do not dismantle, open or shred the Battery ingredients	
hazards and classification	contained within or their ingredients products could be harmful.	
危害分类	正常使用没有危险,不能拆解、打开或分解电池,里面的材料或成分是有害的	
Apperance,	Solid object with no odor, no color.	
Color, and Odor 外观、颜色及气味	无色、无味、固态	
Primary Route(s)	These chemicals are contained in a sealed enclosure. Risk of exposure occurs only if	
of Exposure 主要暴露途径	the cell is mechanically, thermally or electrically abused to the point of compromising	
工文家品之任	the enclosure. If this occurs, exposure to the electrolyte solution contained within can	
	occur by Inhalation, Ingestion, Eye contact and Skin contact	
	这些化学药品装在密封的容器里。暴露的风险只有在电池受到机械、加热或滥用电时危及	
	外壳才会发生。如果发生这种情况,接触电解液所包含的可能发生吸入、食入、皮肤接触、	
	眼睛接触。	
Potential Health	ACUTE (short term): See Section 8 for exposure controls In the event that this battery	
Effects   潜在的健康影响	has been ruptured, the electrolyte solution contained within the battery would be	
1日、1二日、10年/87年/7月1	corrosive and can cause burns.	
	接触控制请看第8章节。在这种情况下,电池破裂,电池中包含的电解液具有腐蚀性,可	
	以引起烧伤。	
	Inhalation: Inhalation of materials from a sealed battery is not an expected route of	
	exposure. Vapors or mists from a ruptured battery may cause respiratory irritation.	

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Page 3 of 13 吸入:从密封电池吸入材料不是预期的接触途径。破裂电池散发出来的气雾会引起呼吸道 刺激。 Ingestion: Swallowing of materials from a sealed battery is not an expected route of exposure. Swallowing the contents of an open battery can cause serious chemical burns of mouth, esophagus, and gastrointestinal tract. 食入: 从密封电池中吞咽材料并不是一种预期的接触途径。吞咽破裂电池的组成成分可以 引起嘴,食道和胃肠道严重的化学烧伤。 Skin: Contact between the battery and skin will not cause any harm. Skin contact with contents of an open battery can cause severe irritation or burns to the skin. 皮肤: 完整的电池与皮肤接触不会造成任何伤害。皮肤接触了破裂电池内部物质可能引起 严重的刺激或烧伤皮肤。 Eye: Contact between the battery and the eye will not cause any harm. Eye contact with contents of an open battery can cause severe irritation or burns to the eye. 眼睛: 完整的电池与眼睛之间的接触不会造成任何伤害。眼睛接触了破裂电池内部物质可 能引起严重的刺激或烧伤眼睛。 CHRONIC (long term): See Section 11 for additional toxicological data 慢性(长期):请看第11章节 Medical Not applicable Conditions 不适用 Aggravated by Exposure 身体状况因暴露 而恶化 Reported as Not applicable carcinogen

#### Section 3 – Composition/Information on Ingredients 第三部分 - 主要成分/组成信息

Information about the chemical nature of product/产品的化学性质信息:

不适用

致癌物质

Chemical Name	Concentration or concentration	CAS Number
化学名称	ranges (%)	CAS 号(化学文摘索引登记号)
	浓度或浓度范围(%)	
Aluminum Foil	2-10	7429-90-5
Nickelous oxide	0-80	1313-99-1
Manganese dioxide	0-15	1313-13-9
Cobalt oxide	0-15	1307-96-6
Styrene-Butadiene-Rubber	<1	9003-55-8
Polyvinylidene Fluoride (PVDF)	<5	24937-79-9
Copper Foil	2-10	7440-50-8
Carbon (proprietary)	10-30	7440-44-0

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Ethylene carbonate	10-20	96-49-1
Steel, Nickel and inert materials	Reminder	N/A

Labeling according to EC directives.

标签需根据 EC 指令

No symbol and risk phrase are required.

不需要任何符号和风险短语。

Note: CAS number is Chemical Abstract Service Registry Number.

注意: CAS 号是化学文摘服务注册号 N/A=Not applicable/不适用

#### Section 4 – First-aid Measures 第四部分 – 急救措施

Inhalation	If contents of an opened battery are inhaled, remove source of contamination or move			
吸入	victim to fresh air. Obtain medical advice.			
吸入				
	如果吸入了破裂电池内部物质,移除污染源或将受害者移至新鲜空气处,寻求医生建议。			
Ingestion	If ingestion of contents of an open battery occurs, never give anything by mouth if victim			
食入	is rapidly losing consciousness, or is unconscious or convulsing. Have victim rinse mouth			
	thoroughly with water. DO NOT INDUCE VOMITING. Have victim drink 60 to 240 mL (2-8			
	oz.) of water. If vomiting occurs naturally, have victim lean forward to reduce risk of			
	aspiration. Have victim rinse mouth with water again. Quickly transport victim to an			
	emergency care facility.			
	如果食入了破裂电池内部物质,受害者正在迅速失去意识,或昏迷或抽搐,千万不要给他			
	们任何食物。让患者用水彻底冲洗口腔。不要催吐。让患者喝 60 - 240 毫升(2-8 盎司)的水。			
	如果呕吐是自然发生的,请让患者身体前倾,以减少误吸的风险。让患者再次用水漱口。			
	迅速将受害者送往急救中心。			
Skin contact	If skin contact with contents of an open battery occurs, as quickly as possible remove			
皮肤接触	contaminated clothing, shoes and leather goods. Immediately flush with lukewarm, gently			
	flowing water for at least 30 minutes. If irritation or pain persists, seek medical attention.			
	Completely decontaminate clothing, shoes and leather goods before reuse or discard.			
	如果接触到破裂电池的内部物质,应尽快去除被污染的衣服、鞋子和皮革制品。立即用温			
	和的流动水冲洗至少30分钟。如果刺激或疼痛持续,立即就医。衣物、鞋及皮具必须彻底			
	   去污,方可再用或弃置。			
Eye contact	If eye contact with contents of an open battery occurs, immediately flush the			
眼睛接触	contaminated eye(s) with lukewarm, gently flowing water for at least 30 minutes while			
	holding the eyelids open. Neutral saline solution may be used as soon as it is available. If			
	necessary, continue flushing during transport to emergency care facility. Take care not to			
	rinse contaminated water into the unaffected eye or onto face. Quickly transport victim to			
	an emergency care facility. 如果眼睛接触了破裂电池内部物质,立即用温水轻轻流动的水将被污染的眼睛冲洗至少 30			
	分钟,同时保持眼睑打开。一旦有了中性盐水溶液,可以立即使用。如有必要,在运送到			
	急救设施期间继续冲洗。注意不要将受污染的水冲洗到未受影响的眼睛或脸上。迅速将受			

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害者送往急救中心。

#### Section 5 – Fire-fighting Measures 第五部分 – 消防措施

Flammable	In the event that this battery has been ruptured, the electrolyte solution contain within the			
Properties	battery would be flammable. Like any sealed container, battery cells may rupture when			
易燃的特性	exposed to excessive heat; this could result in the release of flammable or corrosive			
	materials.			
	在电池已经破裂情况下,电池中的电解液中是易燃的。像任何密封容器一样,电池暴露在			
	过热环境下可能会破裂;这可能导致易燃或腐蚀性材料的释放。			

Suitable extinguishing Media 合适的灭火媒	Use extinguishing media suitable for the materials that are burning. 使用适合于正在燃烧的材料的灭火介质。
Unsuitable extinguishing Media 不合适的灭火 媒介	Not available 不适用
Explosion Data 爆炸系数	Sensitivity to Mechanical Impact: This may result in rupture in extreme cases 对机械冲击的敏感性: 在极端情况下,这可能导致破裂 Sensitivity to Static Discharge: Not Applicable 对静电放电的敏感性: 不适用
Specific Hazards arising from the chemical 由化学物质引 起的特定危害	Fires involving Battery are controlled with water. When water is used, however, hydrogen gas may evolve. In a confined space, hydrogen gas can form an explosive mixture. In this situation, smothering agents are recommended to extinguish the fire 涉及电池的火灾是用水控制的。当使用水时,然而可能会产生氢气。在密闭空间,氢气能形成爆炸性混合物。在这种情况下,建议使用窒息剂灭火
Protective Equipment and precautions for firefighters 消防队员的防 护设备和注意 事项	As for any fire, evacuate the area and fight the fire from a safe distance. Wear a pressure-demand, self-contained breathing apparatus and full protective gear. Fight fire from a protected location or a safe distance. Use NIOSH/MSHA approved full-face self-contained breathing apparatus (SCBA) with full protective gear. 如果发生火灾,撤离该区域并在安全距离内灭火。 戴上需要压力的自给式呼吸器和全套防护装备。 在有保护的地方或安全的距离灭火。 使用NIOSH/MSHA认可的全面自给式呼吸器(SCBA)和全套防护装备。
NFPA 消防协会	Health: 0 Flammability: 0 Instability: 0 健康: 0 易燃性: 0 不稳定性: 0

### Section 6 – Accidental Release Measures

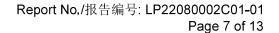


### 第六部分 - 泄露应急处理

Personal Precautions, protective equipment, and	Restrict access to area until completion of clean-up.
emergency procedures	Do not touch the spilled material. Wear adequate
个人预防措施、防护装备和应急程序	personal protective equipment as indicated in Section
1 / 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1 /	8.
	在清理工作完成之前,禁止任何人进入该区域。请勿触
	摸泄露的材料。穿戴足够的个人防护装备,如第8章节
	所示。
Environmental Precautions	Prevent material from contaminating soil and from
环境保护措施	entering sewers or waterways.
	防止物质污染土壤和进入下水道或水道。
Methods and materials for Containment	Stop the leak if safe to do so. Contain the spilled liquid
方法和材料控制	with dry sand or earth. Clean up spills immediately.
	处于安全,阻止泄露,可以用干砂或沙土来遏制液体泄
	露,立即清理泄漏。
Methods and materials for cleaning up	Absorb spilled material with an inert absorbent (dry
清理的方法和材料	sand or earth). Scoop contaminated absorbent into an
	acceptable waste container. Collect all contaminated
	absorbent and dispose of according to directions in
	Section 13. Scrub the area with detergent and water;
	collect all contaminated wash water for proper
	disposal.
	用惰性吸收剂(干燥的沙子或泥土)吸收溢出的材料。 将
	被污染的吸收剂舀到可接受的废物容器中。收集所有被
	污染的吸收剂,并按照第 13 章节的说明处理。用清洁
	剂和水擦洗该区域;收集所有被污染的洗涤水,以适当的 方式处理。

## Section 7 – Handling and Storage 第七部分 – 操作处置与存储

Handling 操作	Don't handle Battery with metalwork. Do not open, dissemble, crush or burn battery. Ensure good ventilation/ exhaustion at the workplace.Prevent formation of dust.Information about protection against explosions and fires: Keep ignition sources away- Do not smoke.
	请勿用金属制品处理电池。请勿打开、分解、挤压或燃烧电池。确保工作场所通风良好。防止灰尘的形成。关于防止爆炸和火灾的信息:远离点火源-不要吸烟。
Storage 存储	If the Battery is subject to storage for such a long term as more than 3 months, it is recommended to recharge the Battery periodically.  如果电池长期存放超过 3 个月,建议定期对电池充电。





3 months: -10°C~+40°C, 45 to 85%RH 3 个月: -10°C~+40°C, 相对湿度 45%-85%RH And recommended at 0°C~+35°C for long period storage.

长期存储在 0°C~+35°C 环境下

The capacity recovery rate in the delivery state (50% capacity of fully charged) after storage is assumed to be 80% or more.

存储后交付状态(满电时容量为50%)的容量保持率为80%以上

Do not store Battery haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by other metal objects.

请勿将电池随意存放在盒子或抽屉中,以免电池之间相 互短路或被其他金属物体短路。

Keep out of reach of children.

请置于儿童接触不到的地方。

Do not expose Battery to heat or fire. Avoid storage in direct sunlight.

请勿将电池置于高温或火中。避免储存在阳光直射的地方。

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Do not store together with oxidizing and acidic materials.

请勿与氧化性和酸性物质存放。

## Section 8 – Exposure Controls and Personal Protection 第八部分 – 接触控制和个人防护

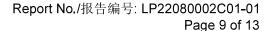
Engineering Controls	Use local exhaust ventilation or other engineering
工程控制	controls to control sources of dust, mist, fumes and
	vapor.
	使用当地的排气通风或其他工程控制,以控制灰尘,雾,烟雾和蒸汽的来源。
	Keep away from heat and open flame. Store in a cool,
	dry place.
	远离热源和明火。储存在阴凉、干燥的地方。
Personal Protective Equipment	Respiratory Protection: Not necessary under normal
个人防护装备	conditions.
	呼吸保护:正常情况下不需要。
	Skin and body Protection: Not necessary under
	normal conditions, Wear neoprene or nitrile rubber
	gloves if handling an open or leaking battery.
	皮肤和身体的保护:正常情况下不需要,处理打开或漏水
	的电池时,应戴氯丁橡胶或丁腈橡胶手套。
	Hand protection: Wear neoprene or natural rubber
	material gloves if handling an open or leaking battery.



	1 age e er re
	手保护:在处理打开或泄漏的电池时,戴氯丁橡胶或天然
	橡胶材料的手套。
	Eye Protection: Not necessary under normal
	conditions, Wear safety glasses if handling an open or
	leaking battery.
	眼睛保护:正常情况下不需要,如果处理打开或泄漏的电
	池,请佩戴安全眼镜。
Other Protective Equipment	Have a safety shower and eye wash fountain readily
其他防护设备	available in the immediate work area.
	在直接的工作区域有一个安全的淋浴和洗眼喷泉.
Hygiene Measures	Do not eat, drink, or smoke in work area. Maintain
卫生措施	good housekeeping.
	请勿在工作区域内进食、饮水或吸烟。维护好管家.

## Section 9 – Physical and Chemical Properties 第 9 部分 – 理化特性

Physical State 物理状态	Form: Solid 形态: 固体 Color: Black 颜色: 黑色 Odor: Odorless 气味: 无气味	
Change in cor	ndition/变化条件:	
pH, with indica	ation of the concentration	Not applicable
pH,有浓度指示	Š	不适用
Melting point/f	reezing point	Not available.
熔点/凝固点		无数据可提供
Boiling Point,	initial boiling point and Boiling range:	Not available.
沸点、初沸点		无数据可提供
F <b>l</b> ash Point		Not available.
闪点		无数据可提供
Upper/lower fl	ammability or explosive limits	Not available.
上/下燃烧或爆	炸限值	无数据可提供
Vapor Pressu	re:	Not applicable
蒸汽压		不适用
Vapor Density	· · · · · · · · · · · · · · · · · · ·	Not applicable
蒸汽密度: (3	空气=1)	不适用
Density/relativ	•	Not available.
密度/相对密度		无数据可提供
Solubility in W	ater:	Insoluble
水溶性		不能溶解





	rage 9 C	<u> </u>
n-octanol/water partition coefficient	Not available.	
正辛醇/水分配系数	无数据可提供	
Auto-ignition temperature	42090	
自然温度	130°C	
Decomposition temperature	Not available.	
分解温度	无数据可提供	
Odout threshold	Not available.	
溴阈	无数据可提供	
Evaporation rate	Not available.	
蒸发速率	无数据可提供	
Flammability (soil, gas)	Not available.	
易燃性(土壤,其他)	无数据可提供	
Viscosity	Not applicable	
粘度	不适用	

## Section 10 – Stability and Reactivity 第十部分 – 稳定性和反应性

Stability 稳定性 Conditions to Avoid (e.g. static discharge, shock or vibration) 应避免的条件(如静电放电、冲击或振动)	The product is stable under normal conditions. 该产品在正常条件下是稳定的。 Do not subject Battery to mechanical shock. Vibration encountered during transportation does not cause leakage, fire or explosion. Do not disassemble, crush, short or install with incorrect polarity. Avoid mechanical or electrical abuse. 请勿对电池进行机械冲击。运输过程中遇到的振动不会引起泄漏、火灾或爆炸。不要拆解、挤压、短路或安装错误的极性。避免机械或
Incompatible Materials	电气滥用。 Not Available
异种材料	无数据可提供
Hazardous Decomposition Products	This material may release toxic fumes if burned or
危害分解物	exposed to fire
	这种材料如果被燃烧或暴露于火中,可能会释放出有毒
	气体
Possibility of Hazardous Reaction	Not Available
危险反应的可能性	无数据可提供



## Section 11 – Toxicological Information

## 第十一部分 - 毒理学信息

Irritation	Risk of irritation occurs only if the cell is mechanically,	
刺激	thermally or electrically abused to the point of	
	compromising the enclosure. If this occurs, irritation to	
	the skin, eyes and respiratory tract may occur.	
	只有当电芯是受到机械,加热或电气滥用达到刺激点的	
	风险。如果发生这种情况,皮肤、眼睛和呼吸道可能会	
	受到刺激。	
Sensitization	Not Available	
敏化作用	无数据可提供	
Neurological Effects	Not Available	
神经系统的影响	无数据可提供	
Teratogenicity	Not Available	
致畸性	无数据可提供	
Reproductive Toxicity	Not Available	
再生毒性	无数据可提供	
Mutagenicity (Genetic Effects)	Not Available	
诱变(遗传效应)	无数据可提供	
Toxicologically Synergistic Materials	Not Available	
协同材料毒理学	无数据可提供	

## Section 12 – Ecological Information

#### 第十二部分 - 生态学信息

General note:	Water hazard class 1(Self-assessment): slightly	
通用信息	hazardous for water.	
	Do not allow undiluted product or large quantities of it	
	to reach ground water, water course or sewage	
	system.	
	水危险等级 1(自评):对水有轻微危险。	
	不允许未经稀释的产品或大量的产品进入地下水、水道	
	或污水系统。	
Anticipated behavior of a chemical product in	Not Available	
environment/possible environmental	无数据可提供	
impace/ecotoxicity		
化学产品在环境/可能的环境预期的行为的一种生态		
毒性		
Mobility in soil	Not Available	
土壤中移动性	无数据可提供	
Persistence and Degradability	Not Available	

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		1 490 11 01 10
持久性和降解性	无数据可提供	
Bioaccumulation potential	Not Available	
生物体内积累的潜力	无数据可提供	
Other Adverse Effects	Not Available	
其他不良反应	无数据可提供	

#### **Section 13 – Disposal Considerations**

第十三部分 - 废弃处置

Do not incinerate, or subject cells to temperature in excess of 70°C, such abuse can result in loss of seal leakage, and/or cell explosion. Dispose of in accordance with appropriate local regulations.

不要焚烧,或使电池温度超过 70°C,这样的滥用可能导致密封泄漏和电池爆炸。请安当地法规处置。

#### **Section 14 – Transport Information**

第十四部分 - 运输信息

Label for conveyance: Lithium Battery Label

运输标签: 锂电池标签

UN Number: UN3480 or UN3481 UN编码: UN3480或UN3481

Packing Group: N/A 包装类别:不适用 EmS No.: F-A, S-I Ems编号: F-A, S-I Marine polluation: No

海洋污染:无

**Proper Shipping name:** 1) Lithium ion batteries; 2) Lithium ion batteries packed with equipment; 3) Lithium ion batteries contained in equipment. (including Lithium ion polymer batteries)

Hazard Classification: The goods shall be complied with the requirments of Section I (or Section IA) of Packing Instruction 965~967 of 64<sup>rd</sup> DGR Manual of IATA (2023 edition), including the passing of the UN38.3 test. And also cpmplies with the Special Provision 188 and 230 of IMDG CODE (Amdt 40-20) Edition.

**正确运输名称:** 1) 锂离子电池单独运输; 2) 锂离子电池和设备包装在一起; 3) 锂离子电池安装在设备中(包含锂离子聚合物电池)

危险分类: 货物应符合 IATA(2023 年版)危险品规则 DGR 64版本中 PI965~967 包装说明 Section I (或 Section IA)的要求,包括通过 UN38.3 测试。同时也符合国际海运危险货物规则 IMDG (Amdt 40-20)版的 188 和 230 特别条款。



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#### Section 15 - Regulation Information

#### 第十五部分 - 法规信息

#### Law information:

法律信息:

《Dangerous Goods Regulations》

《危险品规例》

《Recommendations on the Transport of Dangerous Goods Model Regulations》

《关于运输危险品示范规例的建议》

《International Maritime Dangerous Goods》

《国际危险货物规则》

《Technical Instructions for the Safe Transport of Dangerous Goods》

《危险货物安全运输技术规程》

《Classification and code of dangerous goods》

《危险品分类和编码》

《Occupational Safety and Health Act》(OSHA)

《职业安全与健康法》(OSHA)

《Toxic Substance Control Act》 (TSCA)

《有毒物质控制法》(TSCA)

《Consumer Product Safety Act》(CPSA)

《消费品安全法》(CPSA)

《Federal Environmental Pollution Control Act》(FEPCA)

《联邦环境污染控制法》(FEPCA)

《The Oil Pollution Act》(OPA)

《油污法》(OPA)

《Superfund Amendments and Reauthorization Act Title III (302/311/313)》(SARA)

《超级基金修正案和重新授权法案第三章(302/311/313)》(SARA)

《Resource Conservation and Recovery Act》(RCRA)

《资源保护与恢复法案》(RCRA)

《Safety Drinking Water Act》(CWA)

《安全饮用水法》(CWA)

《California Proposition 65》

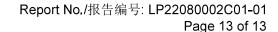
《加州65号提案》

《Code of Federal Regulations》(CFR)

《联邦法规》(CFR)

In accordance with all Federal, State and local laws.

符合所有联邦,州和地方法律。





#### **Section 16 – Other Information**

#### 第十六部分 - 其他信息

The information above is believed to be accurate and represents the best information currently available to us. However, Dongguan Lepont Testing Service Co., Ltd. makes no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. Although reasonable precautions have been taken in the preparation of the data contained herein, it is offered solely for your information, consideration and investigation. This material safety data sheet provides guidelines for the safe handling and use of this product; it does not and cannot advise on all possible situations, therefore, your specific use of this product should be evaluated to determine if additional precautions are required.

The data/information contained herein has been reviewed and approved for general release on the basis that this document contains no export controlled information.

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