From:	(b)(6)
To:	
Subject:	RE: Request
Date:	2020/03/26 15:24:00
Priority:	Normal
Type:	Note

Yeah tomorrow morning is fine.

With the recent covid outbreak and need for ventilators, there is concern about vulnerabilities that could possibly be exploited for such a necessary piece of medical equipment.

The following terms may be of use

ventilator
respiratory ventilator
CPAP
continuous positive airway pressure
(b)(4); (b)(7)(E)

(b)(6)

Thanks,

(b)(6)

From: (b)(6)
Sent: Thursday, March 26, 2020 3:06 PM
To (b)(6)
Subject: RE: Request

Hey, ok. Is it alright if I get back with you tomorrow a.m.?

(b)(6) ?

From: (b)(6)
Sent: Thursday, March 26, 2020 2:47 PM
To: (b)(6)
Subject: Request

He(b)(6

How are you holding up with everything going on?

I was wondering if you've seen any recent alerts or open source information in regards to Ventilator systems and vulnerabilities associated with them?

Thanks,

(b)(6)

Sender:	(b)(6)
Recipient:	
Sent Date:	2020/03/26 15:24:21
Delivered Date:	2020/03/26 15:24:00

From:	(b)(6)
To:	
Subject:	Medical Research items...
Date:	2020/03/26 15:08:00
Priority:	Normal
Type:	Note

(b)(6) and (b)(6)

I was hoping you could use some of the tools available to us to do some research. Specifically I was hoping you could us (b)(5) and (b)(5) I don't expect you to find much but I would like you to search for vulnerabilities associated with medical ventilators. At this point we are only aware of one recall concerning ventilators and it was not specifically a cyber issue. The device that was recalled was a (b)(4) (https://healthitsecurity.com/news/medtronic-ventilator-recalled-by-fda-for-software-update). If you can find any vulnerability discussions surrounding that device it may be a starting point. Not sure the best way to present this list but below are some suggested terms and vendor names to check. Let me know if you have any questions or need additional context. Feel free to use these terms in any combination.

ventilator
respiratory ventilator
CPAP
continuous positive airway pressure
(b)(4); (b)(7)(E)

Thank you,

(b)(6)
Cybersecurity and Infrastructure Security Agency (CISA)
US Department of Homeland Security (DHS)

~~Office:~~
Mobile:
NSTS:
Email:
C-LAN:
(b)(6)

CISA Industrial Control System Disclosure Policy
CISA Vulnerability ICS PGP Encryption Key

Sender:	(b)(5)
Recipient:	
Sent Date:	2020/03/26 15:08:19
Delivered Date:	2020/03/26 15:08:00

From:	(b)(6)
To:	
Subject:	RE: [EXTERNAL] Ventilator feedback...
Date:	2020/03/26 15:58:49
Priority:	Normal
Type:	Note

That's interesting never thought of that but doesn't surprise me at all good to know

From (b)(6)
Sent: Thursday, March 26, 2020 1:04 PM
To (b)(6)
Subject: RE: [EXTERNAL] Ventilator feedback...

Interesting.

The FDA says you can use a CPAP in pinch

https://www.fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-continues-facilitate-access-crucial-medical-products-including

From (b)(6)
Sent: Thursday, March 26, 2020 12:53 PM
To (b)(6)
Subject: RE: [EXTERNAL] Ventilator feedback...

Hell(b)(6
Here is the list of medical devices and vendors I am currently working with and some information I found about th(b)(4) . Currently, I don't have any open vulnerability tickets reported by any vendors or researchers surrounding ventilators. I conducted some precursory open source review about ventilator vulnerabilities and I didn't find much but I did see this article about (b)(4)

(b)(4)

(b)(4); (b)(7)(E)

Additionally, we are working primarily with (b)(4); (b)(7)(E) actively on the following cases

(b)(4); (b)(7)(E)

Let me know if you have any questions.

Thank You,

(b)(6)

From: (b)(6)
Sent: Thursday, March 26, 2020 8:40 AM
To: (b)(6)
Subject: [EXTERNAL] Ventilator feedback...

(b)(6)

When do you think you will have the feedback on the research you did on the ventilators? I want to get this over to a couple of analyst that can do some “dark web” enrichment. I want to give them as much context as I can before they get let loose doing research.

Thanks,

(b)(6)
Cybersecurity and Infrastructure Security Agency (CISA)
US Department of Homeland Security (DHS)

~~Office:~~
Mobile:
NSTS:
Email:
C-LAN:
(b)(6)

CISA Industrial Control System Disclosure Policy
CISA Vulnerability ICS PGP Encryption Key

Sender:	(b)(6)
Recipient:	
Sent Date:	2020/03/26 15:58:21
Delivered Date:	2020/03/26 15:58:49

From:	(b)(6)
To:	
Subject:	Re: Follow Up
Date:	2020/03/26 16:52:25
Priority:	Normal
Type:	Note

Thanks (b)(6)

(b)(6) has a (b)(4) contact too

(b)(6)
Cybersecurity and Infrastructure Security Agency
Cell (b)(6) Emai (b)(6)

From (b)(6)
Sent: Thursday, March 26, 2020 4:51:41 PM
To: (b)(6)
Subject: Re: Follow Up

Just pinged (b)(5)

Get Outlook for iOS

From (b)(6)
Sent: Thursday, March 26, 2020 4:31:18 PM
To: (b)(6)
Subject: Follow Up

(b)(6) I just sent a note off to Sonny at Owens. Maybe he'll have a contact. Medical devices really is a hole in the work we did. My understanding is that some of the largest ventilator suppliers include (b)(4) I have not worked with any of them on the devices side. A long-shot might be the folks at (b)(that we met with on the radiopharmaceutical issue. I can give them a try too. Other than that, not sure where else to turn in the very short-term.

(b)(6)

Get Outlook for iOS

Sender:	(b)(6)
Recipient:	

	(b)(6)
Sent Date:	2020/03/26 16:52:25

From:	(b)(6)
To:	
Subject:	Follow Up
Date:	2020/03/26 16:31:19
Priority:	Normal
Type:	Note

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(b)(6)

Get Outlook for iOS

Sender:	(b)(6)
Recipient:	
Sent Date:	2020/03/26 16:31:18
Delivered Date:	2020/03/26 16:31:19

From:	(b)(6)
To:	
Subject:	RE: Medical Research items...
Date:	2020/03/27 10:27:00
Priority:	Normal
Type:	Note

H(b)(6

Just finished queries on my end for the below. The vendor resources didn't have anything relevant to the below that I noticed. I also searched Google and no relevant information either. I'll make sure to search for ventilator-related vulns as part of my daily searches incase something pops up!

Please let me know if you need anything else!

Thank you,

(b)(6)
(b)(6)
(b)(6)

From: (b)(6)
Sent: Thursday, March 26, 2020 3:08 PM
To: (b)(6)
(b)(6)
Subject: Medical Research items...

(b)(6) nd (b)(6)

I was hoping you could use some of the tools available to us to do some research. Specifically I was hoping you could use (b)(5) and (b)(5) e. I don't expect you to find much but I would like you to search for vulnerabilities associated with medical ventilators. At this point we are only aware of one recall concerning ventilators and it was not specifically a cyber issue. The device that was recalled was a (b)(4)
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ventilator
respiratory ventilator
CPAP

continuous positive airway pressure

(b)(4); (b)(7)(E)

Thank you,

(b)(6)

Cybersecurity and Infrastructure Security Agency (CISA)
US Department of Homeland Security (DHS)

~~Office:~~ (b)(6)
Mobile:
NSTS:
Email:
C-LAN:

CISA Industrial Control System Disclosure Policy
CISA Vulnerability ICS PGP Encryption Key

Sender	(b)(6)
Recipient	
Sent Date:	2020/03/27 10:28:01
Delivered Date:	2020/03/27 10:27:00

From	(b)(6)
To	
CC	
Subject:	Re: Thurs. 11am EST 1-855-852-7677 pin 1050448 Skunkworks COVID-19
Date:	2020/03/25 20:07:00
Priority:	Normal
Type:	Note

Awesome, thank you. Ill forward you the names of NIST Participants in case you have questions for them.

Referred to Another Agency/Component

Referred to Another Agency/Component

From: (b)(6)
Sent: Wednesday, March 25, 2020 8:44 AM
To: (b)(6)
(b)(6)

Subject: [EXTERNAL] RE: Thurs. 11am EST 1-855-852-7677 pin 1050448 Skunkworks COVID-19

AGENCA: Skunkworks Science Research for potential COVID applications. Unless otherwise requested by call participants, we'll plan to table the discussion after one hour and resume next week, same time, to cover remainder of agenda items and next set of issues.

Goal: Structured Discussion to identify options, technical synergies, barriers and rapid transition options for promising solutions

a. • Mechanical Ventilators with lower HCW requirement
b. • Transition solutions: testing, peer review, approval, scale-up
c. • Other Incoming Requests for engineering solutions to meet needs

1. • Introduction (b)(6)
   Note: In lieu of a rollcall, please give a short background of you/your group's expertise when you first engage on the call.

2. • Design approaches to Mechanical Ventilator equipment needs COVID-19

Please address: your research approach; technical hurdles and needs; testing and transition plan

a. • DOE National Labs
    i. (b)(6) Lawrence Livermore National Lab
    ii. Others from DOE with Design approaches
b. • NASA
    i. Design approaches
c. • Technical Discussion (All)

3. • Facilitation of Transition of Solution Sets: What can you bring to the table?
    a. • TSWG/CTTSOS (b)(6)
    b. • NASA lessons learned from transitioning Ebola solutions (b)(6)
    c. • Process for facilitation of review/approval FDA (b)(6)

4. • Other Incoming Requests for technical/engineering solutions for COVID-19 needs
    a. • Dialysis Systems (b)(6)
    b. • DOD (b)(6)
    c. • Decon (b)(6)
    d. • What technical/engineering equipment has not been requested that needs to be requested? (All)

5. • Next call Thursday, 11am EST…same number. Continue to send items to me for next week's agenda.

https://www.dhs.gov/publication/st-master-question-list-covid-19

From: (b)(6)
Sent: Tuesday, March 24, 2020 11:59 AM

To: (b)(6)
(b)(6)

Subject: Thurs. 11am Discuss Skunkworks Science Research for potential COVID applications

Science Research Colleagues (NSF, DOD, DOE, DHS, NASA)
Thursday, 11am EST, March 26th
1-855-852-7677 pin (b)(6)

All, Please save the date for a coordination call Thursday, 11AM (EST) to explore potential emerging and converging technology solutions to some of the COVID-19 response challenges.

Focus will be on equipment needs, e.g. mechanical ventilators that require fewer personnel to operate, and other potential solutions, not medical countermeasures.

Feel free to include relevant colleagues, but have them send me their contact info so I can include them on a calendar invite.

(b)(6)

Sender:	(b)(6)
Recipient:	
Sent Date:	2020/03/25 20:06:59
Delivered Date:	2020/03/25 20:07:00

Referred to Another Agency/Component

From: (b)(6)
Sent: Wednesday, March 25, 2020 5:06 PM
To: (b)(6)
Subject: From NASA

Referred to Another Agency/Component

From: (b)(6)
Sent: Wednesday, March 25, 2020 8:44 AM
To: (b)(6)

(b)(6)

(b)(6)

Cc (b)(6)

Subject: [EXTERNAL] RE: Thurs. 11am EST 1-855-852-7677 pin (b)(6) Skunkworks COVID-19

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Unless otherwise requested by call participants, we'll plan to table the discussion after one hour and resume next week, same time, to cover remainder of agenda items and next set of issues.

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   Please address: your research approach; technical hurdles and needs; testing and transition plan
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      i. (b)(6) Lawrence Livermore National Lab
      ii. Others from DOE with Design approaches
   b. • NASA
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    c. • Decon (b)(6)
    d. • What technical/engineering equipment has not been requested that needs to be requested? (All)

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(b)(6)

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(b)(6)

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Feel free to include relevant colleagues, but have them send me their contact info so I can include them on a calendar invite.

(b)(6)

DHS HQ (b)(6)

Sender	(b)(6)
Recipient	
Sent Date:	2020/03/25 20:34:38
Delivered Date:	2020/03/25 20:35:07