	FORM PTO-1619A Expires 06/30/99 OMB 0651-0027		8-2000		7			nt of Commerce demark Office ENT
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	Name (line 1) Carl S. Kirkconnell						08-22	
Ì	Name (line 2)							
	Second Party						Exe Mont	cution Date h Day Year
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	Name (line 2)						09	643440
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	Name (line 1) RAYTHEON COMPANY						is an as	ent to be recorded signment and the
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_	Name Colin M. Raufer. Reg. No. 40.78	31						
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> PATENT REEL: 011042 FRAME: 0256

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Name Patent Records Administrat	ion	
Address (line 1) RAYTHEON COMPANY		
Address (line 2) Bldg. E1, M.S. E150		
Address (line 3) P.O. Box 902		
Address (line 4) El Segundo. California 902	45	
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signed by the first named executing inventor.	in Application, enter the date the patern application	
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has not been assigned.  Number of Properties		4 1
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**Fee Amount** 

**Method of Payment: Deposit Account** 

Statement and Signature

indicated herein.

Colin M. Raufer, Reg. No. 40,781

Name of Person Signing

**PATENT** 

50-0616

Yes

No

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## RECORDATION FORM COVER SHEET CONTINUATION PATENTS ONLY

U.S. Department of Commerce Patent and Trademark Office

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Name (line 2)		Execution Date Month Day Year
Name (line 1)	Iberto E. Schroth	08-22-00
Name (line 2)		Execution Date Month Day Year
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Application N	umber(s) or Patent Number(s) Mark if additional numbers attached  Patent Application Number or the Patent Number (DO NOT ENTER BOTH numbers for the sa	me property).
	tent Application Number(s) Patent Numb	er(s)

PATENT

**REEL: 011042 FRAME: 0258** 

## Raytheon

## ASSIGNMENT

Page 1 of 2 PD-99W205

WHEREAS, I, as below named sole inventor (if only one name is listed below) or joint inventor (if plural names are listed below) of the city and state as stated below next to my name, have invented a(an) PULSE TUBE EXPANDER HAVING A POROUS PLUG PHASE SHIFTER for which application for Letters Patent of the United States has been executed by me on or before this day, or (if the following is completed) filed on \_\_\_\_\_\_ as Serial No. \_\_\_\_\_; and

WHEREAS, RAYTHEON COMPANY, (hereinafter referred to as Raytheon), a Delaware Corporation, having its principal place of business in Lexington, Massachusetts, is desirous of acquiring the entire and exclusive right, title and interest in, to and under said invention, said application and any and all Letters Patent that may be granted therefor in the United States and throughout the world;

NOW, THEREFORE, in consideration of the obligations voluntarily assumed by me and set forth in an invention agreement between me and my employer, effective the date as stated below next to my name, and other good and valuable consideration, receipt of which is hereby acknowledged, I do hereby sell, assign and transfer to RAYTHEON, its successors, assigns or other legal representatives, the entire and exclusive right, title and interest in and to said invention invented by me, to said application and any and all applications which are continuations, continuations-in-part, divisions or substitutes of said application and any and all Letters Patent that may be granted therefor in the United States and throughout the world on any of said applications and to any and all reexaminations, reissues, renewals or extensions of said Letters Patent in the United States and throughout the world for the full term or terms for which said Letters patent may be granted in the United States and throughout the world; authorize and request The Commissioner of Patents and Trademarks of the United States and all foreign countries to issue all such Letters Patent to said RAYTHEON, its successors, assigns or other legal representatives; covenant that no assignment, sale, agreement, transfer or encumbrance has been, or will be, made or entered into which would conflict with this assignment, sale and transfer; and agree to communicate to RAYTHEON, its successors, assigns or other legal representatives, upon request and at no cost or expense to me, any facts known by me respecting said invention, do all lawful acts, including the execution and delivery of all papers and proper oaths and giving of testimony that is deemed necessary or desirable by RAYTHEON, its successors, assigns or other legal representatives with regard to said invention for protecting, obtaining, maintaining and enforcing any and all of said Letters Patent in the United States and throughout the world for said invention and for perfecting, affirming, recording and maintaining the title of RAYTHEON, its successors, assigns or other legal representatives, and generally cooperate to the fullest extent in all matters pertaining to said invention, and any and all of said Letters Patent and the title thereto in RAYTHEON, its successors, assigns or other legal representatives.

> PATENT REEL: 011042 FRAME: 0259

## Raytheon

ASSIGNMENT Page 2 of 2 PD-99W205

IN WITNESS WHEREOF, I have executed this instrument.

FULL NAME OF SOLE OR JOINT INVENTOR	INVENTOR'S SIGNATURE		DATE			
CARL S. KIRKCONNELL	Cal Stukenell		8/22/00			
RESIDENCE (CITY AND STATE)		INVENTIO	N AGREEMENT DATE			
HUNTINGTON BEACH, CA		June 25	, 1990			
FULL NAME OF SOLE OR JOINT INVENTOR	INVENTOR'S SIGNATURE		DATE			
KENNETH D. PRICE	Some / Tu	_	8/22/00			
RESIDENCE (CITY AND STATE)		INVENTIO	N AGREÉMENT DATE			
LONG BEACH, CA		August 2	2, 1972			
FULL NAME OF SOLE OR JOINT INVENTOR	INVENTOR'S SIGNATURE		DATE			
WILLIAM E. CROFT	Willian & Crost		8.32-03			
RESIDENCE (CITY AND STATE)		INVENTIC	N AGREEMENT DATE			
VAN NUYS, CA		January	9, 1978			
FULL NAME OF SOLE OR JOINT INVENTOR	INVENTOR'S SIGNATURE		DATE			
ALBERTO E. SCHROTH	Albert Schott		8/22/00			
RESIDENCE (CITY AND STATE)			N AGREEMENT DATE			
MISSION HILLS, CA		Septemb	per 16, 1991			
STATE OFCALIFORNIA	)					
	) SS:					
COUNTY OF LOS ANGELES	/	3.0				
On	re me, Joseph W. Stor		,			
a Notary Public in and for said State, personally appeared <u>Carl S. Kirkconnell</u> ,						
Kenneth D. Price, William E. C	Croft, and Alberto E. Schroth		,			
personally known to me or proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/s/te/they executed the same in his/her/their authorized capacity(tes), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.						
WITNESS my hand and official sea						

JOSEPH W. STONE
Commission # 1172250
Notary Public - California
Los Angeles County
My Comm. Expires Feb 5, 2002

**RECORDED: 08/22/2000** 

Notary Public

PATENT REEL: 011042 FRAME: 0260